Steel Treaters Return to First Convention City

Eighth National Convention and Exposition of American Society for Steel Treating Presents Sharp Contrast to Gathering in 1919

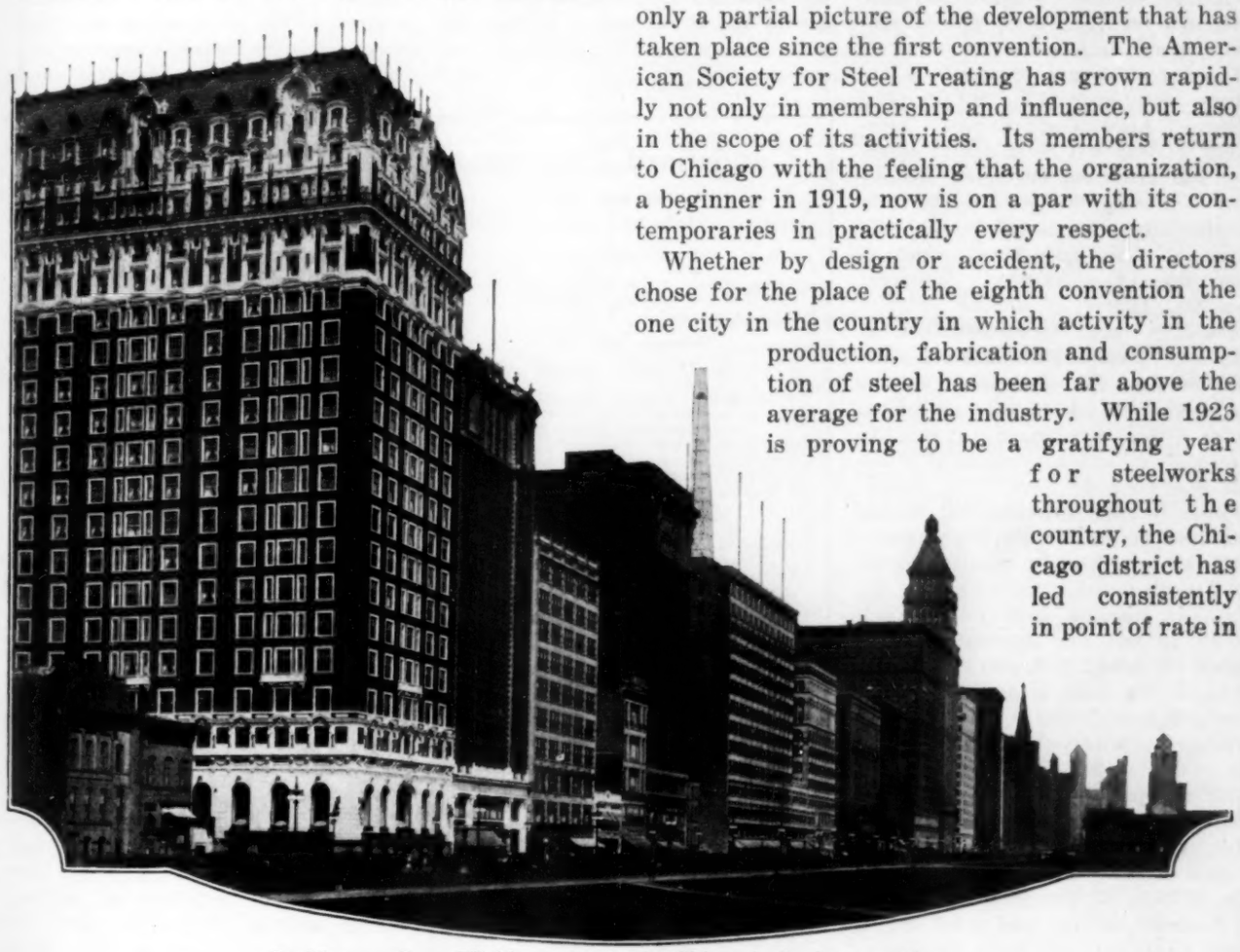
WHEN thousands of executives, engineers and others identified with the making, treating and fabricating of steel gather on Sept. 20 at Chicago for the annual convention and exhibition of the American Society for Steel Treating, they will return to the city where the first national meeting of steel treaters was held just seven years ago.

The contrast between the two conventions is striking. In 1919, when the American Steel Treaters' society held its exhibition in the Seventh Regiment armory, about 50 manufacturers were represented, roughly 6500 square feet of exhibition space was occupied and the attendance was 6000.

The approaching show has attracted more than 350 exhibitors who will require about 80,000 square feet of space, while it is estimated at least 50,000 will attend the exhibition.

But comparison of the size of exhibits presents only a partial picture of the development that has taken place since the first convention. The American Society for Steel Treating has grown rapidly not only in membership and influence, but also in the scope of its activities. Its members return to Chicago with the feeling that the organization, a beginner in 1919, now is on a par with its contemporaries in practically every respect.

Whether by design or accident, the directors chose for the place of the eighth convention the one city in the country in which activity in the production, fabrication and consumption of steel has been far above the average for the industry. While 1926 is proving to be a gratifying year for steelworks throughout the country, the Chicago district has led consistently in point of rate in



Looking north on Michigan avenue in Chicago's business section

Looking southeast on Lake Shore drive. In the left rear may be seen Municipal Pier where the exposition is to be held and at the right the Drake hotel which is convention headquarters

operations. Its activity in this, as in other industrial lines, reflects the growing importance of the great mid-western consuming area, of which Chicago is the logical distributing point.

A most complete program has been prepared for the eighth annual convention and includes a fine selection of technical papers prepared by authors well known in metallurgical fields of America and Europe. Technical sessions will be held both morning and afternoon beginning Monday and continuing through Friday, these sessions being conducted in the ballroom of the Drake hotel, which is convention headquarters. Wherever possible, papers of similar subjects have been listed for presentation at the same session. Following the practice initiated last year, most of the papers will be available in preprinted form. This was found to simplify presentation and to encourage valuable discussion.

Heat treating furnaces will receive attention at the Monday morning session and fatigue and corrosion of metal will be discussed in the afternoon. On Tuesday morning steel melting will be the subject, four interesting papers being scheduled. Behavior of iron and steel during heat treatment will be the principal theme in the afternoon. The annual meeting of the society will be conducted on Wednesday morning with the president, R. M. Bird, presiding. At the conclusion of this session, the first E. D. Campbell Memorial Lecture will be presented by Dr. William M. Guertler, Berlin.

Behavior of iron and steel during heat treatment will again be considered on Thursday morning and also in the afternoon. Papers of a miscellaneous character are to be read at the session on Friday morning. The program in the afternoon will be in charge of the hardness testing committee of the society, the meeting being conducted as a symposium. Five papers are to be read. As was the case last year, the conference on metallurgical education will be held at a luncheon at the Drake hotel on Tuesday noon.

Condensed Program

Monday, Sept. 20

10:00 a. m.—Technical session, Drake hotel.
12:00 m. —Registration, Municipal Pier.
12:00 m.-10:00 p. m.—Exposition open.
2:00 p. m.—Technical session, Drake hotel.

Tuesday, Sept. 21

9:30 a. m.—Technical session, Drake hotel.
10:00 a. m.-10:00 p. m.—Exposition open.
12:15 p. m.—Metallurgical education luncheon, Drake hotel.
1:00 p. m.—Plant visitation.
2:00 p. m.—Technical session, Drake hotel.
9:30 p. m.—Grand ball, Drake hotel.

Wednesday, Sept. 22

9:30 a. m.—Annual business meeting, Drake hotel.
10:00 a. m.-6:00 p. m.—Exposition open.
10:30 a. m.—E. D. Campbell Memorial Lecture, Drake hotel.
1:00 p. m.—Plant visitation.
2:00 p. m.—Technical session, Drake hotel.
9:30 p. m.—Smoker and frolic, Riding Academy.

Thursday, Sept. 23

9:30 a. m.—Technical session, Drake hotel.
10:00 a. m.-6:00 p. m.—Exposition open.
1:00 p. m.—Plant visitation.
2:00 p. m.—Technical session, Drake hotel.

Friday, Sept. 24

9:30 a. m.—Technical session, Drake hotel.
10:00 a. m.-10:00 p. m.—Exposition open.
1:00 p. m.—Plant inspection.
2:00 p. m.—Technical session, Drake hotel.

At the invitation of the American Society for Steel Treating, the Society of Automotive Engineers will hold its annual production meeting in Chicago during the same week. Headquarters of the latter are at the Hotel Sherman where technical sessions will be held on Tuesday morning and afternoon and Wednesday and Thursday mornings.

The National Steel and Machine Tool Exposition will be held at Municipal Pier where 80,000 square feet of floor space will be devoted to the display of heat treating equipment, steel and steel products and an unusually large demonstration of machine tools. The latter will be in operation, some on production work. Some idea of the size of the Chicago show is to be gained from the fact that at Cleveland last year exhibit space totaled only 45,000 square feet. The Chicago exposition nearly doubles that in size and includes about 350 exhibitors.

Municipal Pier provides excellent facilities for an exposition as extensive as this. Gas, electric power, water and sewer accommodations are provided exhibitors whose equipment will be in operation. Over 5000 horsepower is required for the show, and necessitated the building of five substations and the purchase of about 25 miles of copper for the construction of service lines.

Municipal Pier extends out into Lake Michigan for almost a mile and is reached conveniently from the Drake hotel by foot, bus and surface car or taxicab. From the loop it is reached by street car or bus. The exposition opens officially at noon

on Monday, but during the remaining four days of the week will open its doors at 10 a. m. It will remain open until 10 p. m. each evening, except Wednesday and Thursday, when the closing time is at 6 p. m.

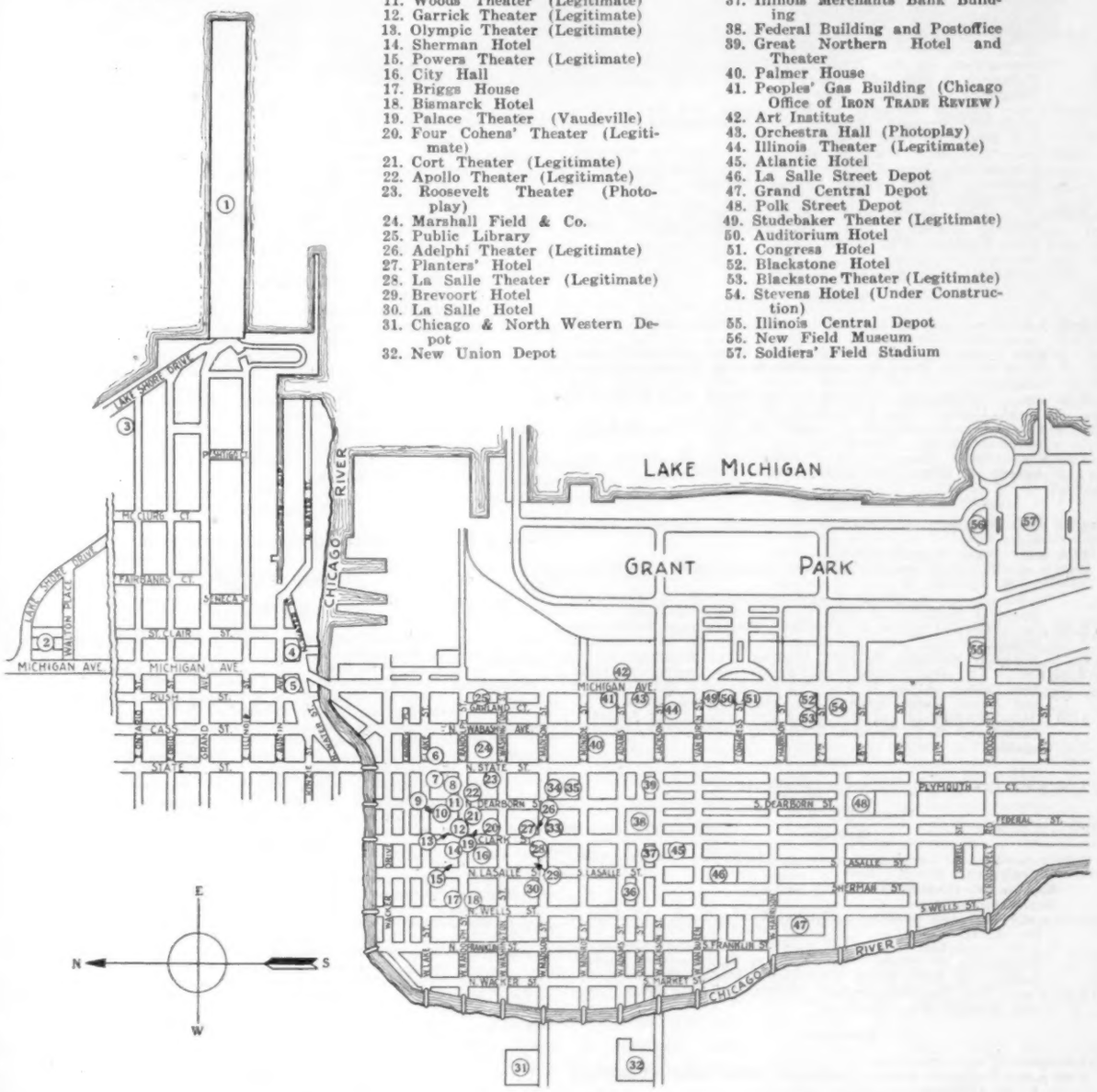
A number of entertainment features have been provided for the week. The grand ball will be held on Tuesday evening in the ballroom of the Drake hotel. On Wednesday evening the smoker and annual frolic will take place at the riding academy at the corner of McClurg Court and East Ontario street, but a few blocks from the Drake hotel. The annual banquet will be served in the ballroom of the Drake hotel on Thursday evening. For those interested in golf, the entertainment committee has scheduled a tournament at one of the country clubs in Chicago.

A rather elaborate program will mark the banquet on Thursday evening. At this time Judge Elbert H. Gary, chairman, United States Steel Corp., and Charles M. Schwab, chairman, Bethlehem Steel Corp., will be conferred with honorary membership in the society. Founder membership will be given to Arthur G. Henry, Chicago, who in 1919 was the first to conceive the idea of holding an exposition in conjunction with the convention. Award of the Henry Marion Howe Gold Medal will be made to the author of the best paper published in *Transactions* during the past year. The recipient of this medal will not be announced prior to the banquet.

Past conventions of the society have shown members to be particularly in-

Down Town Chicago and Points of Interest

1. Municipal Pier
2. Drake Hotel
3. Furniture Mart
4. Tribune Tower
5. Wrigley Buildings
6. Chicago Theater (Photoplay)
7. State-Lake Theater (Vaudeville)
8. Oriental Theater (Photoplay)
9. Selwyn Theater (Legitimate)
10. Harris Theater (Legitimate)
11. Woods Theater (Legitimate)
12. Garrick Theater (Legitimate)
13. Olympic Theater (Legitimate)
14. Sherman Hotel
15. Powers Theater (Legitimate)
16. City Hall
17. Briggs House
18. Bismarck Hotel
19. Palace Theater (Vaudeville)
20. Four Cohens' Theater (Legitimate)
21. Cort Theater (Legitimate)
22. Apollo Theater (Legitimate)
23. Roosevelt Theater (Photoplay)
24. Marshall Field & Co.
25. Public Library
26. Adelphi Theater (Legitimate)
27. Planters' Hotel
28. La Salle Theater (Legitimate)
29. Brevoort Hotel
30. La Salle Hotel
31. Chicago & North Western Depot
32. New Union Depot
33. Morrison Hotel
34. McVickers' Theater (Photoplay)
35. Majestic Theater (Vaudeville)
36. Continental & Commercial Bank Building
37. Illinois Merchants Bank Building
38. Federal Building and Postoffice
39. Great Northern Hotel and Theater
40. Palmer House
41. Peoples' Gas Building (Chicago Office of IRON TRADE REVIEW)
42. Art Institute
43. Orchestra Hall (Photoplay)
44. Illinois Theater (Legitimate)
45. Atlantic Hotel
46. La Salle Street Depot
47. Grand Central Depot
48. Polk Street Depot
49. Studebaker Theater (Legitimate)
50. Auditorium Hotel
51. Congress Hotel
52. Blackstone Hotel
53. Blackstone Theater (Legitimate)
54. Stevens Hotel (Under Construction)
55. Illinois Central Depot
56. New Field Museum
57. Soldiers' Field Stadium



terested in plant visitation, the trips always being well attended. Chicago provides unusual opportunity for visiting widely varying industries and therefore the committee on plant visitation has arranged a schedule for Tuesday, Wednesday, Thursday and Friday afternoons which provides considerable choice. The complete schedule of inspection trips will be found in detail on page 563.

In recent years, an increasing number of women is attending the convention. In anticipation of a better attendance at Chicago this year, the ladies entertainment committee has arranged a pretentious program consisting of luncheons, automobile rides, shopping tours and the like. Headquarters for the ladies will be at the Drake hotel.

Complete Program and Technical Papers

Monday, Sept. 20

MORNING

10:00 a.m.—Meeting in ballroom, Drake hotel.
Welcome by Chicago chapter, T. E. Barker, chairman.
Address of welcome, T. V. Purcell, general convention chairman.
Response, President R. M. Bird.

10:15 a.m.—Technical session, ball room, Drake hotel. Chairman, V. O. Homerberg.
"Importance of Cementite," R. G. Guthrie, Peoples Gas, Light & Coke Co., Chicago.

10:50 a.m.—"Electric Annealing of Magnetic Materials for Telephone Apparatus," W. A. Timm, Western Electric Co., Chicago.

11:25 a.m.—"An Efficient Carburizing Furnace of the Surface Combustion Type," Dr. A. E. White and E. R. McPherson.

AFTERNOON

2:00 p.m.—Technical session, ballroom, Drake hotel. Chairman, H. M. Boylston.
"Observations on the Microstructure of Path of Fatigue Failure in a Specimen of Armco Iron," F. F. Lucas, Bell Telephone Laboratories, New York.

2:40 p.m.—"Fatigue Strength of Hard Steels and Its Relation to Tensile Strength," J. M. Lessells, Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa.

3:20 p.m.—"Corrosion-Fatigue of Metals as Affected by Chemical Composition, Heat Treatment and Cold Working," D. J. McAdam, United States Naval Academy, Engineering Experiment Station, Annapolis, Md.

4:00 p.m.—"High Speed Steel," Fred C. A. H. Lantsberry, William Jessop & Son, Ltd., Brightside Works, Sheffield, England, (By title).

Tuesday, Sept. 21

MORNING

9:30 a.m.—Steel melting session, ballroom, Drake hotel. Chairman W. J. Priestly.
"Hair Cracks in Steel Rails," J. H. Whitly, South Durham Steel & Iron Co. Ltd., Malleable Works, Stockton-on-Tees, England.

9:50 a.m.—"Solidification of Steel in the Ingot Mold," Alex J. Feild, United Alloy Steel Corp., Canton, O.

10:30 a.m.—"Desulphurization of Steel," E. J. Lowry, Hickman, Williams & Co., Chicago.

11:15 a.m.—"Basic Open-Hearth Practice," C. H. Herty Jr., bureau of mines experiment station, Pittsburgh.

AFTERNOON

12:15 p.m.—Metallurgical education symposium luncheon, Drake hotel.

1:00 p.m.—Plant inspection.

2:00 p.m.—Technical session, ballroom, Drake hotel. Chairman, T. D. Lynch.
"Notes on the A_3 Stable Transformation," H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland.

2:20 p.m.—"Graphitization at Constant Temperature Below the Critical Point," H. A. Schwartz and H. H. Johnson, National Malleable & Steel Casting Co., Cleveland.

2:40 p.m.—"The Graphitizing Behavior of Iron Carbide in Pure Iron-Carbon Alloys in the Critical Range," H. P. Evans and Anson Hayes, Iowa State College, Ames, Iowa.

3:20 p.m.—"Mechanical and Machining Properties of an Annealed Cast Iron," G. C. Priester, University of Minnesota, Minneapolis.

EVENING

9:30 p.m.—Grand ball, ballroom, Drake hotel.

Wednesday, Sept. 22

MORNING

9:30 a.m.—Annual business meeting, ballroom, Drake hotel. Chairman, R. M. Bird.
Reports of chapter delegates.
Reports of officers.

10:30 a.m.—Technical session, ballroom, Drake hotel. Chairman, Dr. A. E. White.
E. D. Campbell Memorial Lecture—"On the Corrosion-Resistance of Steels," Dr. William M. Guertler, Metall-Institut of Technischen Hochschule, Berlin, Germany.

11:15 a.m.—"The Iron-Molybdenum System," W. P. Sykes, General Electric Co., Cleveland.

AFTERNOON

1:00 p.m.—Plant inspection.

2:00 p.m.—Technical session, ballroom, Drake hotel. Chairman, F. P. Gilligan.
"Cyanide Brittleness," V. E. Hillman and E. D. Clark, Crompton & Knowles Loom Works, Worcester, Mass.

2:30 p.m.—"Wear Resistance of Carburized Steel Versus Cast High-Manganese Steel." W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

3:00 p.m.—"Wear of Steels with Particular Reference to Plug Gages," H. J. French and H. K. Herschman, bureau of standards, Washington.

3:30 p.m.—"Studies on Electric Welding," L. J. Weber, University of Minnesota, Minneapolis.

EVENING

9:30 p.m.—Smoker and annual frolic, Riding Academy.

Thursday, Sept. 23

MORNING

9:30 a.m.—Technical session, ballroom, Drake hotel. Chairman, Dr. Albert Sauveur.
"On the Transformation of Retained Austenite into Martensite by Stress," Kotaro Hondo and Keizo Iwase, Tohoku Imperial university, Sendai, Japan.

9:50 a.m.—"The Nature of Oil-Hardening Nondeforming Tool Steels," E. C. Bain and M. A. Grossmann, Union Carbide & Carbon Research Laboratories Inc., New York.

10:30 a.m.—"The Hardening of Metals by Dispersed Constituents Precipitated from Solid Solutions," R. S. Archer, Aluminum Co. of America, Cleveland.

11:10 a.m.—"Investigation of the Relationship Between the Standard Tension and impact Tests on a Group of Steels of Varying Compositions," Dr. F. C. Langenberg and H. C. Mann, Watertown arsenal, Watertown, Mass.

AFTERNOON

1:00 p.m.—Plant inspection.

2:00 p.m.—Technical session, ballroom, Drake hotel, Chairman, Dr. George K. Burgess.
"The Decomposition of the Austenite Structure in Steels," R. L. Dowdell and Dr. O. E. Harder, University of Minnesota, Minneapolis.

2:40 p.m.—"On the Light Metal Alloys," Dr. William C. Guertler, Berlin, Germany.

3:20 p.m.—"The Tensile Properties of Stainless Iron and Other Alloys at Elevated Temperatures," P. G. McVetty and N. D. Mochel, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

EVENING

6:30 p.m.—Annual banquet, ballroom, Drake hotel.

Friday, Sept. 24

MORNING

9:30 a.m.—Technical session, ballroom, Drake hotel, Chairman, Bradley Stoughton.
"Failure of Bolt Steels," V. T. Malcolm, Chapman Valve Mfg. Co., Indian Orchard, Mass.

10:00 a.m.—"Internal Stresses in Quenched Steel," S. L. Hoyt, General Electric Co., Schenectady, N. Y.

10:40 a.m.—"Aluminum Bronze," Jerome Strauss, United States Naval Gun Factory, Navy yard, Washington.

11:15 a.m.—"New Process of Surface Hardening Special Steels," T. H. Nelson, Ludlum Steel Co., Watervliet, N. Y.
"Dendritic Crystallization and Grain Formation in Steels," V. N. Krivobok, bureau of metallurgical research, Carnegie Institute of Technology, Pittsburgh. (By title).

AFTERNOON

1:00 p.m.—Plant inspection.

2:00 p.m.—Symposium of hardness testing committee, ballroom, Drake hotel. Chairman, Dr. Zay Jefferies.
"Standardizing the Brinell Hardness Test," H. M. German, Universal Steel Co., Bridgeville, Pa.

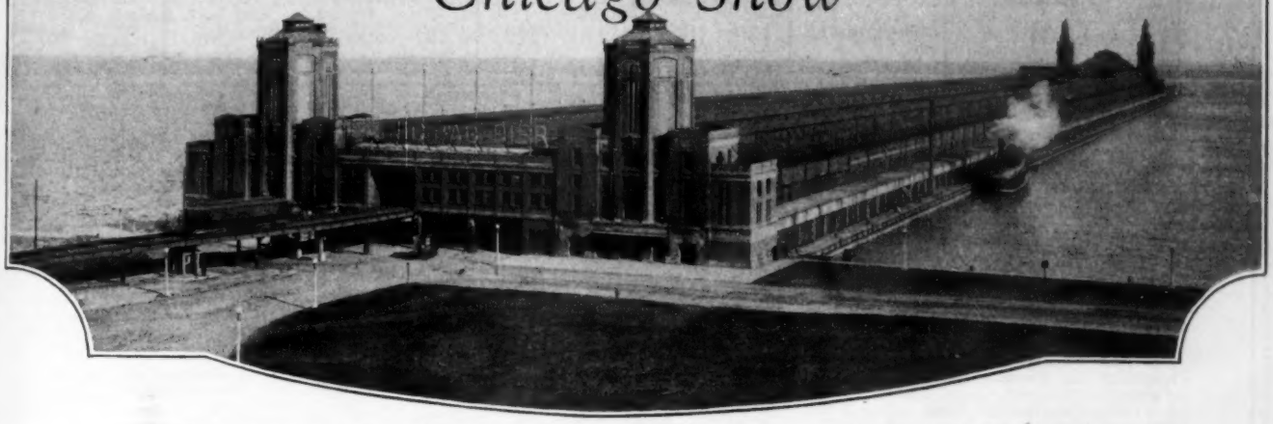
2:20 p.m.—"On the Hardness of Metals," Dr. William Guertler, Berlin, Germany.

3:10 p.m.—"Correlation of Magnetic Properties with Mechanical Hardness in Cold-Worked Metals," S. R. William, Amherst College, Amherst, Mass.

3:40 p.m.—"Hardness Testing of Steel Balls by Magnetic Methods," S. R. William, Amherst College, Amherst, Mass.

4:10 p.m.—"Additional Notes on the Hardness and Toughness of High-Speed Steel," Robert K. Barry, Barry Co., Muscatine, Iowa.

Making, Treating and Working Steel Will Be Demonstrated at Chicago Show



The entrance to Municipal Pier which houses the 80,000 *square feet of exhibition space*

ABRASIVE MACHINE TOOL CO., East Providence, R. I.—This company will exhibit in operation a motor-driven surface grinder with exhaust attachment and magnetic chuck; a vertical spindle surface grinder with motor drive, generator and magnetic chuck; also unit assemblies and attachments, including a new high speed attachment. K. B. MacLeod and Walter Sceeles will attend.

ACME MACHINE TOOL CO., Cincinnati—A new full universal turret lathe featuring the recently designed dual control, will be operating on heavy forgings at this company's booth. Representatives will be Charles Meier, Fred Winkelman and Howard Myers.

ADAMS, GEORGE, & SON, Chicago—At this company's booth will be shown sections of steel in various stages of manufacture from raw material to finished bar; sections of steel showing structure of unannealed, annealed and hardened pieces; dies and tools. Representatives to attend will include H. R. Adams, R. M. Jaeckel, K. Engelsted, A. M. Diehl and H. H. Kurtz.

AIR REDUCTION SALES CO., New York—Oxygen and acetylene in cylinders; welding and cutting torches of both hand and semi-automatic mechanical type; regulators; manifolds and supplies are to be displayed in operation. B. N. Law, F. E. Maeurer, Charles Williams, S. Shaykin, R. Miller, G. E. Harcke, J. F. Callahan and G. Van Alstyne will attend.

AJAX MANUFACTURING CO., Cleveland—Working models of a 4-inch up-setting forging machine and a motor-driven board hammer using direct gear connections with universal flexible couplings will be demonstrated at the booth of this company. The original of the forging machine weighs 50 tons and of the hammer, 33 tons. Representatives will be A. L. Guilford, W. W. Criley, Gordon Fristoe and H. D. Heman.

ALCUMITE CORP., Dayton, O.—This company will exhibit a corrosion-resisting metal in the form of sheets, rods, bolts and nuts; a perforated sheet pickling basket; and typical castings. A miniature wood pickling tank with acid-proof metal hardware also will be on display. Representatives will be W. E. Pratt, N. E. Philpot and E. R. Sutler.

ALLEGHENY STEEL CO., Brackenridge, Pa.—This company will show a corrosion, heat and abrasion resisting iron alloy in numerous finished forms such as pump shafts, automotive products, roofing sheets, tubing, bars and sheets. Those to attend will be C. D. Callomon, R. M. Allen, J. A. Armstrong and W. J. McArdle.

ALLEN, CHARLES G., Barre, Mass.

ALLIS-CHALMERS MFG. CO., Milwaukee, Wis.

ALTO MFG. CO., Chicago.

AMERICAN CRUSHER & MACHINERY CORP., New York—A chip crusher for crushing long fluffy turnings will be operated in this company's booth. The machine is built in two models, one being belt driven and the other gear driven from a 10-horsepower motor. Capacity of the crushers is 1 ton per hour. B. A. Wittkuhns will be in charge.

AMERICAN CYANAMID CO., New York—A line of case hardening and electroplating chemicals are to be displayed by this company. In addition, a new and improved process for case hardening will be demonstrated for the first time. Representatives will be L. E. Swensen, G. N. Omohundro and E. B. Shimer.

AMERICAN GAS ASSOCIATION, New York.

AMERICAN GAS FURNACE CO., Elizabeth, N. J.—A number of gas heat treating furnaces, some operating on production work, are to be demonstrated. The furnaces will include heating furnaces, carburizing furnaces, high speed furnaces, salt bath furnaces, melting furnaces, etc. Miscellaneous gas appliances also will be shown. In attendance will be P. C. Osterman, John Mehrman, Gustav Schwab, T. Farwick Sr., W. J. Barenscheer and O. T. Muehlemeyer.

AMERICAN METALLURGICAL CORP., Boston—This company will operate a 10 x 18-inch electric lead pot furnace completely equipped. It will display also a 30-kilowatt fully equipped cyanide pot furnace. Representatives will be K. A. Juthe, S. N. Juthe, A. C. Wright, W. H. Ogden and J. C. Juthe.

AMERICAN RESISTOR CORP., Philadelphia—Will display in operation its electric heating elements and a new type terminal construction for nonmetallic resistor elements in a furnace operating at high temperature. Represented by Joseph A. Steinmetz, W. E. Duersten, Harold N. Shaw, B. G. Tarkington, O. E. VanAltena, K. E. Rogers.

AMERICAN STAINLESS STEEL CO., Pittsburgh—A wide line of products manufactured from stainless iron and stainless steel will be displayed at this booth. J. S. Neale, C. S. Bunting and J. C. Holding will attend.

AMERICAN TOOL WORKS CO., Cincinnati—Among the machine tools to be operated at this booth will be a 5-foot triple purpose radial drill; a 3-foot sensitive radial drill; a 3-foot plain radial drill; a 14-inch by 8-foot toolroom lathe; a 24-inch x 12-foot heavy pattern lathe and a 24-inch heavy-duty shaper. Representatives will be J. C. Hussey, C. H. Cormany and F. L. Stubenroth.

AMERICAN TWIST DRILL & TOOL CO., Detroit—At this booth will be shown high speed twist drills; high speed track bits; and high speed bonding bits. C. G. Munn, S. A. Tucker and S. Sowden will attend.

AMES, B. C., CO., Waltham, Mass.—A cabinet-type bench lathe; a bench milling machine; a combination lathe, milling machine and drill press; and micrometer dial gages will be shown by this exhibitor. Warren Ames will be in charge.

ANDERSON DIE MACHINE CO., Bridgeport, Conn.

ARMSTRONG-BLUM MFG. CO., Chicago—Hacksaw machines; automatic high speed saws and a metal band saw mill will be operated by this company. High-speed hacksaw blades will be demonstated. H. J. Blum will be in charge.

ARMSTRONG BROS. TOOL CO., Chicago—Included in the exhibit of this company will be lathe, planer and shaper tools; lathe dogs, clamps, ratchet drills, wrenches; stocks and dies; pipe cutters; pipe vises and tongs; and similar accessories. S. Garrone, S. Welter,

How to Reach the Pier

TO REACH Municipal Pier, from the Drake hotel a number of routes are available. It is a short walk by way of Lake Shore Drive which passes the hotel. A bus may be boarded southbound at the hotel and transfer made to surface car at Grand avenue or at Chicago avenue, both eastbound. Taxicab fare is unusually low in Chicago and a cab from hotel to pier is a matter of only a few cents.

From the downtown loop the pier may be reached by any northbound street car line to Grand avenue and a transfer east. The northbound bus lines on Michigan avenue may be used, walking east on Grand avenue.

The Drake hotel is reached best from the Loop by a northbound Michigan avenue bus to the door.

Alphabetical List of Exhibitors Who Will Show P

SECTION A	SECTION B	SECTION C	SECTION D	SECTION E	SECTION F	SECTION G
SPACES 1—84	SPACES 85—149	SPACES 150—180A	SPACES 181—240	SPACES 241—308	SPACES 309—364	SPACES 365—407

Exhibitor	Section and Space No.
Abrasive Machine Tool Co.	D 217-240
Acme Machine Tool Co.	D 217-240
Adams, George, & Son	A 36
Air Reduction Sales Co.	B 145, 149
Ajax Mfg. Co.	G 396B
Alcumite Corp.	B 135
Allegheny Steel Co.	A 7
Allen, Charles G.	G 389A
Allis-Chalmers Mfg. Co.	C 163
Alto Mfg. Co.	G 393
American Crusher & Machinery Corp.	G 380
American Cyanamid Co.	C 179
American Gas Association	C 180A
American Gas Furnace Co.	C 177A
American Machinist	E 297
American Metallurgical Corp.	B 86
American Resistor Co.	B 105,109
American Stainless Steel Co.	A 62
American Tool Works Co.	E 246-251
American Twist Drill & Tool Co.	B 133
Ames, B. C., Co.	E 277B
Anderson Die Machine Co.	E 282A
Andresen, F. C., & Associates	A 50
Armstrong-Blum Mfg. Co.	D 193
Armstrong Bros. Tool Co.	D 189
Armstrong Cork & Insulation Co.	B 90
Atkins, E. C., & Co.	F 336
Atlas Press Co.	E 262A
Atlas Steel Corp.	A 53
Avey Drilling Machine Co.	E 245-249
Badger Tool Co.	G 368
Baker Bros.	D 217-240
Baker-Raulang Co.	B 118
Barber-Colman Co.	F 338
Bardons & Oliver	F 310-328
Barnes, W. F. and John, Co.	F 310-328
Barnes Drill Co.	E 253
Barrett, Leon J., Co.	G 376
Bartlett, Edwin E.	G 366
Bath, John, & Co.	D 204
Bausch & Lomb Optical Co.	B 100
Bearium Bearings Inc.	A 72A
Bell & Gossett	A 55
Bellevue Industrial Furnace Co.	B 144
Bellis Heat Treating Co.	A 34
Best, W. N., Corp.	C 173
Bethel-Player & Co.	F 310-328
Bethlehem Steel Co.	A 42-47
Billings & Spencer Co.	E 272
Bilton Machine Tool Co.	F 310-328
Black & Decker Mfg. Co.	D 188-200
Blacker Engineering Co.	F 364B
Blake & Johnson Co.	E 280B
Blakeslee, G. S., & Co.	G 377
Blanchard Machine Co.	D 217-240
Botfield Refractories Co.	B 110B
Boyle Valve Co.	A 12A
Bridgeport Safety Emery Wheel Co.	G 395
Bristol Co.	B 88
Brown Boiler Co. of Illinois	D 186A
Brown, D. P., & Co.	F 339A
Brown & Sharpe Mfg. Co.	G 393A, 393B
Brown Instrument Co.	A 83
Brown Lynch Scott Co.	C 153A
Bryant Chucking Grinder Co.	G 369
Buckeye Portable Tool Co.	F 364A
Buffalo Forge Co.	E 268
Bullard Machine Tool Co.	D 217-240
Calorizing Co.	B 124C
Campbell, Andrew Co., Inc.	E 296
Carborundum Co.	A 65, D 185
Carlton Machine Tool Co.	F 310-328
Carpenter Steel Co.	A 74
Case Hardening Service Co.	A 55
Celite Products Co.	B 85
Central Steel Co.	A 66-71
Chapin, W. R., Co.	C 165
Char Products Co.	A 68
Chicago Pneumatic Tool Co.	F 360
Cincinnati Bickford Tool Co.	D 217-240
Cincinnati Milling Machine Co.	D 217-240
Cincinnati Planer Co.	D 217-240
Cincinnati Shaper Co.	G 375
Clark, James Jr., Electric Co.	265A
Clark Equipment Co.	A 32
Clark Tructractor Co.	A 32
Cleveland Automatic Machine Co.	G 365
Cleveland Planer Co.	E 266-267B
Cleveland Twist Drill Co.	D 202-207
Climax Molybdenum Co.	A 28
Clipper Belt Lacer Co.	B 141A
Cochrane-Bly Co.	D 217-240
Colburn Machine Tool Co.	E 26-267
Colonial Steel Co.	D 194-195
Colonial Tool Co.	C 164
Colts Patent Fire Arms Mfg. Co.	G 400
Columbia Tool Steel Co.	A 75-79
Commonwealth Edison Co.	A 72
Cone Automatic Machine Co.	F 345
Consolidated Machine Tool Corp. of America	E 269
Cooper Hewitt Electric Co.	G 398
Crankshaft Machine Co.	F 358-363
Crucible Steel Co. of America	A 22-30
Cushman Chuck Co.	G 385
Daily Metal Trade	A 37
Danly Machine Specialties Inc.	D 209, 213
Darwin & Milner Co.	A 8
Davis Boring Tool Co.	G 396A
Davison, N. C., Gas Burner & Welding Co.	C 173A
Dearborn Chemical Co.	A 44
Diamond Machine Co.	E 262-63
Disston, Henry, & Sons Inc.	A 29, 33
Dixon, H. L., Co.	G 394C
Donner Steel Co.	A 54
Dreses Machine Tool Co.	G 382-383
Driver-Harris Co.	A 20
Drying Systems Inc.	D 187A
Duriron Co.	B 135
Eaton Electric Furnace Co.	B 110A
Eclipse Fuel Engineering Co.	C 180A
Edlund Machinery Co.	F 310-328
Electric Furnace Co.	A 78
Electrical Refractories Co.	A 24B
Electro-Alloys Co.	B 138
Ellis, R. E., Engineering Co.	F 352A
Emerman, Louis E., & Co.	B 129B
Endicott Forging & Mfg. Co.	B 124B
Engelhard, Charles, Inc.	A 16
Equipment Mfg. Co.	F 344B
Essley, E. L. Machinery Co.	E 254-255
Ex-Cell-O Tool & Mfg. Co.	D 197, 201
Fairbanks, Morse & Co.	D 396C
Federal Machinery Sales Co.	F 310-328
Federal Press Co.	F 310, 328
Ferner, R. Y., Co.	E 285
Ferry Cap & Set Screw Co.	G 385
Finkl, A., & Sons Co.	A 21
Firth-Sterling Steel Co.	B 1044, 108
Fitchburg Grinding Machine Co.	F 310-28
Flather Co.	E 276A
Foote Bros. Gear & Machine Co.	G 397
Foote-Burt Co.	D 217-240
Ford, J. B., Co.	D 214
Forging-Stamping-Heat Treating	A 35
Foster Machine Co.	E 252
Fox Machine Co.	E 257
Gairing Tool Co.	D 205
Gallmeyer & Livingston Co.	G 372
Gammons Holman Co.	F 340B
Gardner Machine Co.	F 310-328
Gaterman, W., Mfg. Co.	F 349A
Gathmann Engineering Co.	A 10, 11
General Alloys Co.	A 3-4
General Electric Co.	B 91, 95
Geometric Tool Co.	F 325
Gibson, William D., Co.	A 72
Giddings & Lewis Machine Tool Co.	D 217-240

P. L. Armstrong, Lennox Armstrong and Horace Armstrong will be present.

ARMSTRONG CORK & INSULATION CO., Pittsburgh—Cork and cork specialties including gaskets, cork board for insulation, pipe covering, flooring and insulating brick will be displayed by this exhibitor. Representatives will be G. G. Oetting, E. C. Lloyd, G. E. Hendricks and G. W. Nitchy.

ATKINS, E. C., & CO., Indianapolis—Metal cutting machines; bandsaw and planer knives are to be exhibited. Representatives will be E. S. Norvell, G. N. Haug, W. F. Juppenlatz, L. L. Okey, S. M. Perrigo and W. de R. Knight.

ATLAS PRESS CO., Kalamazoo, Mich.—Power arbor presses and hand arbor presses will be operated at this company's booth. James Collins and J. H. Penniman will attend.

ATLAS STEEL CORP., Dunkirk, N. Y.—Sections of hot-rolled steel and cold-drawn products; tool and die steels are to be exhibited. A number of finished products, high speed forgings, plant photographs and photomicrographs also will be shown. In attendance will be A. F. Dohn, C. P. Burgess, F. B. Lounsberry, F. P. Case, H. Hardwicke, W. G. Zetsche, W. B. Moulton, W. H. White, J. C. Gearhardt and W. H. Wills.

AVEY DRILLING MACHINE CO., Cincinnati—Tools to be shown and operated by this company will include five high-speed ball-bearing drilling machines, both single and multiple spindle type; automatic machines; tapping machines; and cutting off machine. Those in charge will be J. G. Hey, H. T. Merrieless, D. A. Patterson and F. L. Hazeldine.

BADGER TOOL CO., Beloit, Wis.

BAKER BROS. INC., Toledo, O.—This company will operate the hydraulic boring and drilling machine with five spindles, also quick change drilling and boring machines. In attendance will be G. E. Hallenbeck, William Baker, H. L. Tigges and W. W. Elliott.

BAKER-RAULANG CO., Cleveland—Electric storage battery industrial trucks will be shown by this exhibitor, including a locomotive type crane with 12-foot boom; a three-wheel tractor; and a vertical motor-generator set for automatic battery charging. In attendance will be W. F. Hebard, T. W. Barnes, V. A. Shouldis and W. I. Lott.

BARBER-COLMAN CO., Rockford, Ill.

BARDONS & OLIVER, Cleveland.

BARNES, W. F. & JOHN, CO., Rockford,

Expositions Grow Larger

Exposition	Year	Place	Floor Space Sq. Ft.
First	1919	Chicago	6500
Second	1920	Philadelphia	9000
Third	1921	Indianapolis	12,000
Fourth	1922	Detroit	20,000
Fifth	1923	Pittsburgh	30,000
Sixth	1924	Boston	39,500
Seventh	1925	Cleveland	45,000
Eighth	1926	Chicago	80,000

Products at the Eighth National Steel Exposition

Exhibitor	Section and Space No.
Gilbert & Barker Mfg. Co.	B 131
Gilbert, J. E., Grinder Co.	G 381A
Gisholt Machine Co.	E 270-275
Gits Bros. Mfg. Co.	G 389
Goddard & Goddard Co.	D 211
Gordon, Claude S., Co.	D 186
Goss & DeLeeuw Machine Co.	F 341
Gould & Eberhardt	D 217-240
Gray, G. A., Co.	F 310-328
Greenfield Tap & Die Corp.	G 401
Hagan, George J., Co.	B 106, 107
Halcomb Steel Co.	A 27, 31
Hall-Will Inc.	G 382-395
Hammond Mfg. Co.	D 217-240
Hande Wrench Sales Co.	B 129A
Hanson-Whitney Machine Co.	G 373
Heald Machine Co.	F 347-351
Heat Treating Supply Co.	C 168
Hebard, W. F., & Co	B 118
Heim Grinder Co.	G 399
Heppenstall Forge & Knife Co.	B 139
Hevi Duty Electric Co.	B 99
High Power Tool Corp.	F 358-363
High Speed Hammer Co.	E 261
Hoefer Mfg. Co.	F 344A
Holcroft & Co.	B 98
Hoover Steel Ball Co.	A 25A
Hoskins Mfg. Co.	B 87
Houghton, E. F., & Co.	B 115, 119
Illinois Tool Works	A 57
International Machine Tool Co.	E 258-259
International Nickel Co.	A 88, 89
Interstate Iron & Steel Co.	B 122, 123
Iron Age	A 2
IRON TRADE REVIEW	A 37
Jarvis, Charles L., Co.	F 310-328
Jessop Steel Co.	D 184
Jones & Lamson Machine Co.	G 405-407
Jones & Laughlin Steel Corp.	A 63
Kane & Roach	G 392
Kearney & Trecker Corp.	F 333, 333A
Keller Mechanical Engineering Corp.	D 217-240
Kelly Reamer Co.	D 187
Kempsmith Mfg. Co.	G 385
Keystone Lubricating Co.	A 17
King Refractories Co.	B 137
Kingsbury Machine Co.	E 283A
Kloster Steel Corp.	A 69
Knight, W. B., Machinery Co.	F 374
Kropp Forge Co.	B 136
Landis Machine Co.	D 217-240
Landis Tool Co.	F 337
La Salle Tool Co.	G 382-395
LeBlond, R. K., Machine Tool Co.	F 310-328
Leeds & Northrup Co.	B 89-93, 97
Lehmann Machine Co.	F 312
Leitz, E., Inc.	A 1
Leland-Gifford Co	F 357
Liberty Machine Tool Co.	G 370, 371
Lindberg Steel Treating Co.	A 64A
Link-Belt Co.	G 404
Lodge & Shipley Machine Tool Co.	D 217-240
Logansport Machine Co.	F 356B
Loshbough-Jordon Tool & Machine Co.	G 375
Ludlum Steel Co.	B 142, 143
Machinery	D 208
McCrosky Tool Corp.	F 340A
McGill Metal Co.	A 6
Mackintosh-Hemphill Co.	B 130
Madison-Kipp Corp.	D 210
Mahr Mfg. Co.	C 169
Manning, Maxwell & Moore Inc.	G 382-396
Marshall & Huschart Machinery Co.	D 217-240
Metalwood Mfg. Co.	F 356A
Michigan Tool Co.	C 164
Micro Machine Co.	G 382-395
Midvale Co.	A 41
Moline Tool Co.	D 217-240
Molybdenum Corp. of America	A 9
Monarch Machine Tool Co.	G 394-395A
Morse Twist Drill & Machine Co.	A 15
Morton Mfg. Co.	F 353
Murchey Machine & Tool Co.	F 348A
National Acme Co.	F 342-343
National Automatic Tool Co.	D 217-240
National Electric Light association	B 94
National Machinery Co.	C 178
National Twist Drill & Tool Co.	F 330-335
Nazel Engineering & Machine Works	D 217-240
Neff Kohlbusch & Bissell Inc.	E 272-283B
New Britain Machine Co.	E 301-305
Niagara Machine & Tool Works	E266-267A
Niles-Bement-Pond Co.	E 286-303
Niles Tool Works	E 298-303
Norton Co.	B 111, F 346, 350
Nuttall, R. D., Co.	C 166
Oesterlein Machine Co.	E 281A
Ohio Machine Tool Co.	E 308
Ohio Steel Foundry Co.	A 73
Oilgear Co.	D 217-240
O. K. Tool Co.	D 191
Oliver Instrument Co.	E 285B
Olsen, Tinius, Testing Machine Co.	A 82
Oxweld Acetylene Co.	C 160
Park Chemical Co.	A 24A
Peerless Machine Co.	B 128
Pels, Henry, & Co.	E 273
Penton Publishing Co.	A 37
Peoples Gas Light & Coke Co.	C 178A, 179A
Perfection Tool Hardening Co.	A13A
Pittsburgh Instrument & Machine Co.	A 64B
Plibrico Jointless Firebrick Co.	A 84
Potter & Johnston Machine Co.	E 289 293
Pratt & Whitney Co.	E 286-295
Precision Truing Machine & Tool Co.	F 348B
Production Machine Co.	E 292
Pyrotung Mfg. Co.	A 25B
Racine Tool & Machine Co.	D 190
Rahn-Larmon Co.	G 366-375
Rand Kardex Service Corp.	A 12B
Reed-Prentice Co.	G 367
Reeves Pulley Co.	B 120
Republic Flow Meters Co.	A 40
Rivett Lathe & Grinder Corp.	F 352B
Rockwell, Stanley P., Co.	B 113
Rockwell, W. S Co.	B 134
Rodman Chemical Co.	B 116
Roessler & Hasslacher Chemical Co.	A 49
Ruemelin Mfg. Co.	B 141B
Ryerson, Joseph T., & Son	E 300
Safety Emery Wheel Co.	A 81
Scherr, George, Co.	E 284
Sebastian Lathe Co.	F 313-328
Seneca Falls Machine Co.	G 402, 403
Shore Instrument & Mfg. Co.	A 51
Sidney Machine Tool Co.	E 266-267C
Simonds Saw & Steel Co.	D 212
S. K. F. Industries, Inc.	C 161
Skybryte Co.	C 157
Sleeper & Hartley Inc.	E 280A
Smith & Mills Co.	F 310-328
Smith, David H., & Son.	G 394
Southern Manganese Steel Co.	A 52
Spencer Turbine Co.	D 183
Standard Fuel Engineering Co.	D 182
Standard Steel Specialties Co.	B 114
Standard Tool Co.	C 176
Starrett, L. S., Co.	F 309
Steel City Testing Laboratory	A 5
Stockbridge Machine Co.	E 276B
Stocker-Rumely-Wachs Co.	G 366-376
Strand, N. A., & Co.,	A 77
Stuart, D. A., & Co.	C 153B
Sun Oil Co.	C 170
Sundstrand Machine Tool Co.	E 260
Surface Combustion Co.	C 162
Swedish Crucible Steel Co.	C 171
Swedish Iron & Steel Corp.	A 14
Taylor Instrument Co.'s	A 59
Thompson, Henry G., & Son Co.	C 180
Thompson Grinder Co.	G 392
Timken Roller Bearing Co.	A 56, 60
Union Drawn Steel Co.	C 158
Union Electric Steel Corp.	A 76A
Union Mfg. Co.	F 339B
Union Twist Drill Co.	B 140
Unishear Co.	A 68
United Alloy Steel Co.	C 146, 147
United States Electrical Tool Co.	B 117
Universal Boring Machine Co.	F 310-328
Universal Grinding Machine Co.	F 310-328
Universal Steel Co.	A 61
V & O Press Co.	D 217-240
Vacuum Belting Co.	F 349B
Vanadium-Alloys Steel Co.	A 18-19
Van Dorn Electric Tool Co.	G 395B
Van Norman Machine Tool Co.	G 394B
Vulcan Crucible Steel Co.	C 172
Vulcan Mold & Iron Co.	A 13B
Walcott Machine Co.	F 358-363
Walker, O. S., Co.	F 310-328
Wappler Electric Co.	A 76B
Warner & Swasey Co.	G 378, 379
Western Bearings Co.	A 80
Westinghouse Electric & Mfg. Co.	B 92 93
Wheelock, Lovejoy & Co.	B 126 127
Whipp Machine Tool Co.	E 263A
Whitney Mfg. Co.	G 373
Whitney Metal Tool Co.	G 395C
Wilmarth & Morman Co.	E 256
Wilsey-Tuthill Pumps	G 381
Wilson-Maeulen Co.	C 167
Wisconsin Electric Co.	B 124A
Zeh & Hahnemann Co.	E 277A
Ziv Steel & Wire Co.	A-8

Ill.—A 20-inch general purpose production drill and single purpose 20-inch production drill will be operated at this booth. J. S. Barnes and V. A. Root will be in charge.

BARNES DRILL CO., Rockford, Ill.—Operated at this booth will be a number of self-oiling all geared machines including a tapping machine; drilling machines of light and heavy duty and a hydraulically reciprocated honing machine. Those to attend will be J. E. Andress, A. M. Johnson, A. G. Block, W. M. Fairbairn, R. S. Walker and F. A. Swanson.

BARRETT, LEON J., CO., Worcester, Mass.—A centrifugal machine for extracting oil from chips, trimmings and other materials will be demonstrated at this booth. L. J. Barrett and Ralph Simpson will be in charge.

BARTLETT, EDWIN E., Nashua, N. H.

BATH, JOHN, & CO., Worcester, Mass.—Small tools, including high-speed ground thread taps; ground thread gages; ground thread rolling dies; internal micrometers; as well as a number of samples of tapped work will be displayed. Representatives will be John Bath, J. C. Bath, S. W. Bath, R. E. Lamb, C. F. Bigger, F. H. Ford and J. H. Smith.

BAUSCH & LOMB OPTICAL CO., Rochester, N. Y.—Optical instruments to be shown by this company include a large metallographic equipment; contour measuring projector; toolmaker's microscope; binocular microscope; metallurgical microscope; magnifiers and complete accessories. W. T. Jane, F. C. Lau, W. L. Patterson, I. L. Nixon and George Gallasch will attend.

BEARIUM BEARINGS INC., Buffalo, N. Y.

BELL & GOSSETT, Chicago—Carburizing compounds; anticarburizing paint; lead bath covering; drawing salts; hardening salts; heat resisting metal carburizing boxes; lead and cyanide pots; and high temperature furnace cements are to be shown at this booth. Representatives will be W. C. Bell, James Ayling, R. E. Soules, G. A. Mies and E. J. Gossett.

BELLEVUE INDUSTRIAL FURNACE CO., Detroit—This company will show a conveyor type spot heating forge furnace; special fire back brick shapes; oil burners; and gas burners. W. E. Hinz and L. H. Raymo will be in charge.

BELLIS HEAT TREATING CO., Branford, Conn.—A heating medium for hardening, annealing and tempering will be demonstrated at this booth. Containers for the medium

Exposition Hours

Monday, Sept. 20—12:00 *m. to* 10:00 *p. m.*

Tuesday, Sept. 21—10:00 *a. m. to* 10:00 *p. m.*

Wednesday, Sept. 22—10:00 *a. m. to* 6:00 *p. m.*

Thursday, Sept. 23—10:00 *a. m. to* 6:00 *p. m.*

Friday, Sept. 24—10:00 *a. m. to* 10:00 *p. m.*

also will be demonstrated. Those to attend will include A. E. Bellis, J. W. Black, J. J. Lynch and M. K. Epstein.

BEST, W. N., CORP., DEMPSEY FURNACE DIVISION, New York—This company will operate a double chamber high-speed steel furnace; a pot furnace; and an underfired semi-muffle heat treating furnace. H. B. Dempsey, H. E. Vollmers and F. A. Hall will be in attendance.

BETHEL-PLAYER & CO., Westboro, Mass. —A crankshaft lapper, a combination lapper for cylindrical and flat work; and a hole lapper for bushings will be operated at this booth. Sydney Player and D. E. Hulbert will be in charge.

BETHLEHEM STEEL CO., Bethlehem, Pa. —Included in this company's exhibit will be stainless steel; hardened steel rolls; pressed forgings; drop and up-set forgings; alloy and tool steel; tractor wheels; charcoal iron and boiler tubes; and hollow drill steel. Attendants will be W. R. Shimer, A. P. Spooner, H. C. Bigge, J. M. Sylvester, George Buchmaterial. Representatives will be Wadsworth Doster, P. D. Peterson and F. C. White.

BLAKESLEE, G. S., & CO., Chicago—This company will demonstrate machines for removing oil, grease, dirt, chips, etc., from stamped or machined parts; also washing machines for cleaning machined and stamped parts before inspection, assembly, enameling and painting. J. W. Dammers, A. S. Reichel, G. R. Blakeslee and G. P. Anstiss will attend.

BLANCHARD MACHINE CO., Cambridge, Mass.—A high-powered vertical surface grinded equipped with 30-inch magnetic chuck; and a wheel mounter will be operated by this company. In addition, a line of work finished on the grinder will be displayed. H. F. Skillings and C. L. Jones will be in charge.

BOTFIELD REFRACTORIES CO., Philadelphia—Unusual forms of fire brick construction using a fire brick cement made by the company will be shown. One exhibit will be an air-set arch in which heavy refractory construction is supported by a thin layer of cement. Data on firebrick construction and T. F. Hering and H. Will.

BROWN BOILER CO. OF ILLINOIS, St. Louis.

BROWN, D. P., & CO., Detroit—Belting, including leather and woven endless types, will be exhibited by this company. Attending will be W. R. Brown, W. W. Nichols and R. W. Holden.

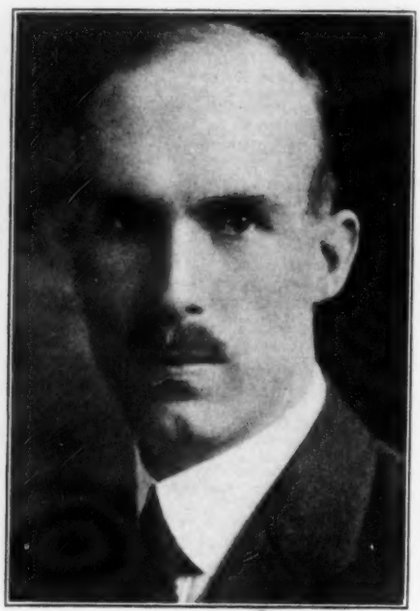
BROWN & SHARPE MFG. CO., Providence, R. I.—This company will operate a gear bobbing machine; high-speed automatic screw machine; universal grinding machine; surface grinding machine; plain milling machine; cutters and hobs. A line of tools also will be shown. Attendants will include H. G. Abbott, G. B. Beale, T. A. Day, R. E. Dorns, F. B. Evans, A. G. Jacobson, H. K. Jackson, W. H. Stewart, W. A. Weatherhead, H. G. Clayton, J. G. Swinburne and W. Spencer.

BROWN INSTRUMENT CO., Philadelphia.

BROWN LYNCH SCOTT CO., Monmouth, Ill. —A new type of ball bearing machine for cleaning and grading carburizing compounds

Officers of American Society for Steel Treating

R. M. BIRD
National President



J. F. HARPER
National Vice President

W. H. EISENMAN
National Secretary

ner, R. A. MacDonald, C. E. Chamberlin, R. S. Tucker, W. C. Cutler and G. A. Richardson.

BILLINGS & SPENCER CO., Hartford, Conn.—At this booth will be operated a universal die sinking machine; a trimmer miller; and a small model board drop hammer. A line of drop forged tools also will be shown. W. R. Moore and Howard Oberg will be in charge.

BILTON MACHINE TOOL CO., Bridgeport, Conn.

BLACK & DECKER MFG. CO., Towson, Md.—Heavy-duty grinders and snaggers; heavy-duty electric buffers; tool grinders; twist drill grinders; portable grinders; portable electric drills; portable electric screw drivers; portable electric socket wrenches; and portable electric tappers will constitute this company's display. Representatives will be S. D. Black, W. C. Allen, R. W. Procter, R. D. Black, R. E. Mizener, R. S. Mitten, H. B. Hazerodt, C. M. Hall, J. K. Kourim, T. H. Belling, G. M. Buchanan, G. H Merriell, W. R. Sprague, A. M. York, J. A. Fairfield and J. T. McQuillin will attend.

BLACKER ENGINEERING CO., New York.

BLAKE & JOHNSON CO., Waterbury, Conn. —A high-seed motor driven gang slitter will be in operation at this company's booth. It will be engaged in cutting strip brass into multiple strips of narrower sizes and rewinding the

furnace lining service will be available. Representatives will be A. H. Engstrom, W. B. Smith and H. F. Kreig.

BOYLE VALVE CO., Chicago—This company will show an unusual valve designed to give increased efficiency in internal combustion engines, particularly automobile engines. Valves taken from racing cars competing in the last 500 mile race at Indianapolis will be on exhibition. E. Van Hambach will be in charge.

BRIDGEPORT SAFETY EMERY WHEEL CO., Bridgeport, Conn.—Equipment to be operated by this company will include a radial-swing frame grinder; an alternating and direct-current motor-driven floor grinders; motor-driven and belt driven buffing lathes; and a 20-inch steel chuck and a sectional grinding wheel. In charge will be H. H. Peck, I. L. Burritt and H. E. Smith.

BRISTOL CO., Waterbury, Conn.—A complete line of industrial instruments including automatic temperature control; pyrometer recorders; thermometer thermostats; recording and indicating pyrometers, gages, etc., will be demonstrated at this booth. A feature will be a new pyrometer control for furnaces, muffles and ovens operating between 400 and 3000 degrees Fahr. Representatives will include H. L. Griggs, L. G. Bean, H. W. Moss, S. W. Case, R. W. Walker, H. A. Graf, C. Worth,

will be in operation. J. A. Scott and W. B. Lynch will be in charge.

BRYANT CHUCKING GRINDER CO., Springfield, Vt.—This company will operate new internal grinding machine in the production of automotive parts. Representatives will include W. L. Bryant, L. C. Gilchrist, R. O. Perry and J. B. Johnson.

BUCKEYE PORTABLE TOOL CO., Dayton, O.—An extensive line of portable pneumatic tools including drills, grinders, reamers, screw drivers, nut setters, stud drivers, buffers and sanders. A feature of this line is the absence of reciprocating parts. In attendance will be W. W. Price, W. R. Gunmere, H. O. Gunmere, H. W. Leighton, C. H. Humphrey and A. E. Welch.

BUFFALO FORGE CO., Buffalo—This exhibitor will operate bar and slab shears; a combination punch, shear and bar cutter; bending rolls; pumps; drills; blowers; cooling fans and forges. The company representatives will be H. W. Wendt Jr., E. G. Leonard and W. J. McDowell.

BULLARD MACHINE TOOL CO., Bridgeport, Conn.—Vertical turret lathes and automatic production equipment is to be demonstarted at this company's booth. Its representatives will be J. W. Bray, E. P. Blanchard, J. M. Welch, Robert Newman and Frank Steinmetz.

CALORIZING CO., Pittsburgh.

CAMPBELL, ANDREW C., INC., Bridgeport, Conn.—Two motor-driven nibbling machines nibbling out shapes and duplicating pieces from templets will be in operation. A belt-driven machine also will be shown as will samples of work done on these tools. Stuart Naramore and J. Johnson will be in charge.

CARBORUNDUM CO., Niagara Falls, N. Y.—Abrasive supplies including wheels, polishing grains, rubbing bricks, disks, stones, papers and cloths will be on display. S. F. Courter, R. C. Bradbury, C. T. Engman, C. H. Niekamp and George Harden will attend.

CARBORUNDUM CO., Perth Amboy, N. J.—Furnaces will be operated to demonstrate relative thermal conductivity of refractory brick and shapes and cements made by this company. Models of a car-type oil-fired annealing furnace and a wire patenting furnace will be shown. Representatives will be R. A. Beverly, C. A. Dutton, W. M. Smith and F. A. Fenno.

CARLTON MACHINE TOOL CO., Cincinnati—A 5-foot heavy-duty radial drill and a 3-foot heavy-duty drill of similar type will be demonstrated by this company. J. C. Carlton and H. J. Westmeyer will be in charge.

CARPENTER STEEL CO., Reading, Pa.—This company's exhibit will consist of products manufactured from corrosion resisting steel and tools made from oil hardening tool steel. The company representatives will be G. H. Edmonds, J. H. Parker, W. S. Jones, R. V. Mann, B. H. DeLong, J. B. Guthrie, C. A. Heil, C. W. Olsen, L. E. Cooney, H. J. Joyce Jr., R. L. Williams, C. W. Windfelder, W. S. Yates and F. R. Palmer.

CASE HARDENING SERVICE CO., Cleveland—The exhibit of this company will comprise carburizing compounds, anticarburizing paint; lead bath covering; drawing salts; hardening salts; heat resisting metal; carburizing boxes; lead and cyanide pots; and high temperature furnace cement. Represented by W. C. Bell, E. J. Gossett and J. S. Ayling.

CELITE PRODUCTS CO., Los Angeles—Refractory products including fire brick, concrete, cement and plastic coats will be on display at this booth. A small furnace will demonstrate the heat conductivity of these materials. Photographs of representative installations will be displayed. Representatives will be N. E. Baxter, T. E. Ventriss, H. N. Haberstroh, Stephen Mahon, C. A. Frankenhoff and E. S. Crosby.

CENTRAL STEEL CO., Massillon, O.

CHAPIN, W. R. CO., Indianapolis—A complete line of tools manufactured by cementing high speed steel to carbon steel will be exhibited. Included in this line will be lathes and planer tools; limestone, marble and granite machining tools; punches and dies; shear blades for steel; and a number of woodworking tools. The company will be represented by W. R. Chapin, S. G. Chapin and W. L. Appel.

CHAR PRODUCTS CO., Indianapolis—A specially manufactured line of carburizing compounds will be exhibited at this booth. Various grades of carbon also will be shown. The representatives will be Dr. I. H. Derby, C. B. Edwards, H. R. Horner and William Higburg.

CHICAGO PNEUMATIC TOOL CO., Chicago.

CINCINNATI BICKFORD TOOL CO., Cincinnati—A 5-foot plain radial drill featuring motor-on-arm drive will be in operation. It will be equipped with a power column clamp and cutting lubricant outfit. N. T. Schauer and R. M. Husband will be in charge.

CINCINNATI MILLING MACHINE CO., Cincinnati—Three milling machines equipped with special and standard attachments and fixtures; a centerless grinder for grinding valve stems automatically; and a 12 by 72-inch self-contained cylindrical grinder will be operated by this manufacturer. Representatives will be R. E. Field, Walter Stegner, F. B. Heitkamp, L. V. Johnson, L. Melhope and C. Roby.

CINCINNATI PLANER CO., Cincinnati—A heavy-duty double-housing planer will be operated at this company's booth, which will be in charge of B. B. Quillen, George Langen, G. D. Walker, C. E. Linden, George Lamoth and J. G. Daum.

CINCINNATI SHAPER CO., Cincinnati—A 20-inch heavy-duty universal shaper will be demonstrated by this manufacturer. Representatives will be R. T. Hozelton, H. S. Robinson, G. W. Diehl and R. N. Piper.

CLARK, JAMES JR., ELECTRIC CO., Louisville, Ky.—Electrically-driven tools to be exhibited by this company will include portable drills; stationery drills; portable screw drivers; post and bench type drill stands; portable hand grinders; lathe grinders; internal grinders; die grinders; bench, pedestal and floor grinders. W. W. Crooker and Carl Jackman will be in charge.

CLARK EQUIPMENT CO., Buchanan, Mich.

CLARK TRUCTRACTOR CO., Buchanan, Mich.—This company will demonstrate a three-wheeled gasoline industrial truck; a gasoline lift truck of standard design; and an unusually small gasoline truck to operate in close quarters. Represented by Walter Nochumson, E. B. Ross, M. L. Halin, J. W. Taylor and F. E. Cooper.

CLEVELAND AUTOMATIC MACHINE CO., Cleveland.

CLEVELAND PLANER CO., Cleveland—A 36-inch open-side planer will be demonstrated by this manufacturer, who will be represented by J. Jenne and L. H. Mesker.

CLEVELAND TWIST DRILL CO., Cleveland—Two high-power drill presses at this company's booth will demonstrate the cutting ability of high-speed twist drills in steel and cast iron. A complete line of drills also will be shown. Attendants will be A. J. Ireland, H. S. White, W. L. Evans, H. E. Berquist, I. P. Farnum, H. A. Bokram, Thomas Thomas, F. A. Kelly, J. G. Ladrick, H. J. Baier, T. M. Shove, D. D. Burdett, J. B. Dillard and H. P. Jenson.

CLIMAX MOLYBDENUM CO., New York—This company will exhibit calcium molybdate; ferromolybdenum; molybdenite ore; and products manufactured from molybdenum steel. Representatives of the company will be B. F. Phillipson, J. D. Cutter, Alan Kissock, J. B. Thorpe, W. P. Woodside and J. Kent Smith.

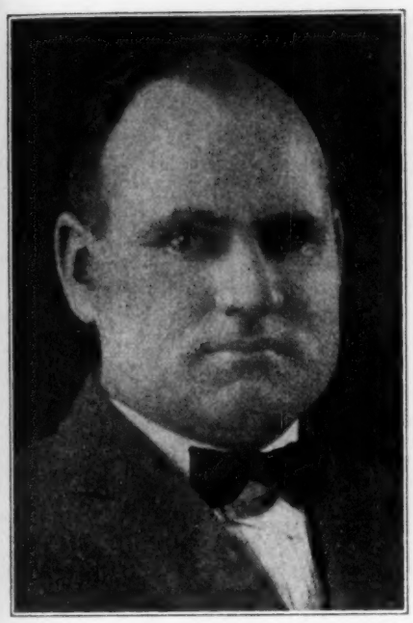
CLIPPER BELT LACER CO., Grand Rapids, Mich.—Belting accessories manufactured by this company will be exhibited and will include belt lacers; belt hooks; belt cutters; connecting pins, etc. An electrically-operated moving belt will be a feature. G. E. Farmer is in charge of the exhibit.

COCHRANE-BLY CO., Rochester, N. Y.—A metal sawing machine; an automatic sharpening machine; and duplex universal shaper-miller will constitute the display of this company. W. H. Welch will attend.

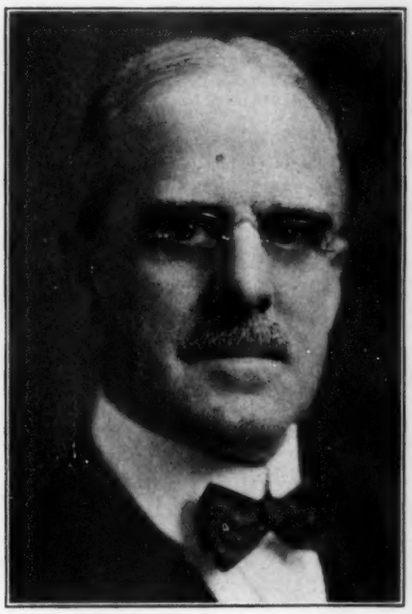
COLBURN WORKS OF CONSOLIDATED MACHINE TOOL CORP., Rochester, N. Y.

COLONIAL STEEL CO., Pittsburgh—Tool steels and products made from them will be exhibited by this manufacturer. Attendants will be J. Trautman Jr., N. B. Hoffman,

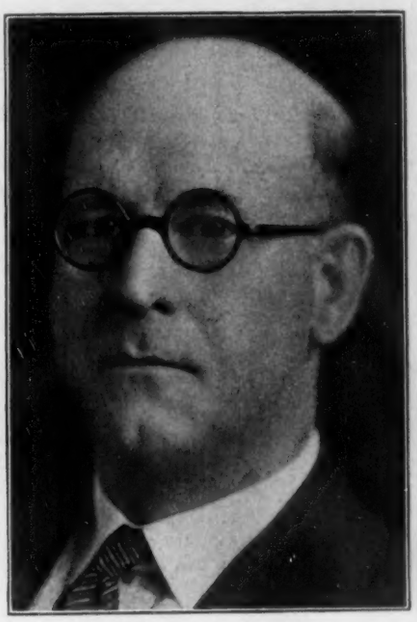
nd Others Prominent in Chicago Convention



ZAY JEFFRIES
National Treasurer



T. V. PURCELL
Chairman Convention Committee

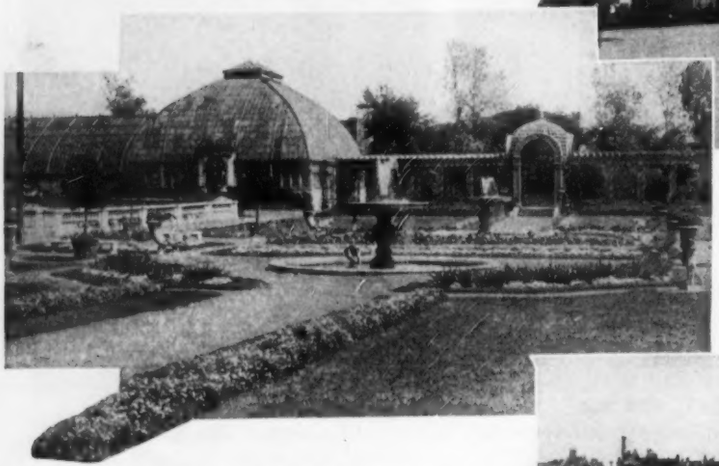


T. E. BARKER
Chairman Chicago Chapter

Looking North Across Michigan Boulevard Link Bridge, Wrigley Building and Tribune Tower

New Field Museum, Grant Park

Plaza at South End Michigan Boulevard Link Bridge



Washington Park Conservatory

Oak Street Beach and Gold Coast from Drake Hotel

Approach to Michigan Boulevard Link Bridge, Looking North

H. M. Bray, W. Earl Thurber, W. W. Shaw, R. I. Beeson and J. S. Froelich.

COLONIAL TOOL CO., Detroit—A complete line of broaches and spline gages will be exhibited. Features of the display will be a new rapid production broach and a new broach puller. Representatives will be T. A. Oleck, J. W. Mull, E. M. Gripton and S. A. Tucker.

COLT'S PATENT FIRE ARMS MFG. CO., Autosan Division, Hartford, Conn.—Two metal parts washing machines will be operated in this company's booth. The smaller unit is designed to meet the requirements of small shops while the larger unit will handle heavy production. C. M. Jackson, G. N. Baubach and G. C. Fraser will be in charge.

COLUMBIA TOOL STEEL CO., Chicago Heights, Ill.—Specimens to show the manufacture of tool steel from raw material to finished product will be on display. The company also will show new and used tools, fractures, test pieces and samples of alloys. Representatives will be A. T. Clarage, C. B. Schoenberger, W. J. Mathews, R. B. McCauley, A. J. Shied Jr., E. H. Pasmore, A. J. Sheid, G. C. Beebe, F. A. Terry, Alex Luttrell, C. M. Rutledge, E. F. Oeser, E. H. Wolters, Thomas Dougall, A. W. Mierow and C. F. Scheid.

COMMONWEALTH EDISON CO., Chicago.

CONE AUTOMATIC MACHINE CO., Springfield, Vt.—In operation at this booth will be a four-spindle automatic bar machine, under the direction of F. L. Cone, Raymond Cone and John H. Glover.

CONSOLIDATED MACHINE TOOL CORP. OF AMERICA, Rochester, N. Y.—Included in the equipment to be demonstrated by this company will be a heavy-duty drill press; 48-inch heavy-duty boring and turning mill; automatic roll grinder; collapsible taps, die heads and cutters; threading machines; continuous milling machine; and tooth rounding machine. Representatives will be Alfred Trosch, A. W. Van Buren, F. P. Scott and C. R. Williams.

COOPER HEWITT ELECTRIC CO., Hoboken, N. J.—This exhibit will exist of a mercury vapor light particularly adapted to machine tool operations. Numerous photographs illustrating application of the light will be available. Representatives will include C. S. Strebig, D. R. Grandy, H. M. Fence, H. T. Braschler, C. R. Gloun and W. W. Becky.

CRANKSHAFT MACHINE CO., Jackson, Mich.

CRUCIBLE STEEL CO. OF AMERICA, New York—Products made from various grades of steel manufactured by this company will be on display. These products will include those used in the airplane, automobile, electrical, machinery, railroad and many other industries. The company will be represented by F. B. Hufnagel, J. A. Mathews, A. T. Galbraith, C. E. Hill, E. P. Gaffney, J. W. Taylor, A. H. Kingsbury, W. E. Pennington, F. A. Lawler, O. F. Carl, J. F. Taylor, J. C. Woodward, A. J. Schatke, A. C. Graham, A. C. Paulson, C. A. Oehring, F. A. Coddington, J. A. Jones, B. F. Reed, Burton Brower, R. C. Oram, W. A. Ellerbrock, T. J. Tamplin, C. G. Werscheid, J. N. Seward, J. E. Hickey, F. Baskerfield, W. Stevenson, R. D. Fletcher, P. J. Connor, C. W. Mayer, Roy Slaughter, E. E. Sharp and W. J. Ervin.

CUSHMAN CHUCK CO., Chicago.

DAILY METAL TRADE, Cleveland—All those who attend the convention are cordially invited to make their headquarters at this booth, which will be fitted up as a rest room. E. L. Shaner, W. W. Maloney, J. D. Pease, F. V. Cole, A. L. Klingeman, L. C. Pelott, W. H. Blair and W. J. Chapman will be the representatives.

DANLY MACHINE SPECIALTIES INC., Chicago—Standard die sets; leader pins and bushings; dowel pins; and die makers' supplies will comprise this exhibit. Representatives will be P. H. Danly, A. G. Gullberg, A. G. Henry, A. L. Miller, T. R. Swenson and A. F. Wallace.

DARWIN & MILNER CO., Cleveland.

DAVIS BORING TOOL CO., St. Louis—Included in this company's exhibit will be expansion car wheel boring tools; a cutter grinding machine; micrometer adjustment boring tools; expanding cutter blocks and bars; expansion reamers; cylinder boring bars; line boring bars; driving box boring tools; and a complete line of units for railroad car departments, railroad general shops and industrial and automobile manufacturers. Representatives will be E. E. Davis, J. M. Davie, R. T. Monahan, V. C. Kloepper, R. A. Braunberger, G. H. Cherrington, G. M. Wolf, A. J. Heaney and J. W. Mull.

DAVISON, N. C., GAS BURNER & WELDING CO., Pittsburgh—A low pressure, air, oil and gas burner in a rivet heating furnace; a domestic oil burner for hot air furnace or hot water heating boiler; and a general line of gas and oil burners will be operated at this company's booth. Edward Poor and N. C. Davison will be in charge.

DEARBORN CHEMICAL CO., Chicago—Among products to be exhibited by this company will be a chemically-compounded rust preventative; powdered cleaners in various grades; and a liquid cleaner. Representatives will be E. M. Converse and C. I. Loudenback.

DIAMOND MACHINE CO., Providence, R. I.—Operating at this company's booth will be a face-grinding machine and fixture, 36 x 84 inches, equipped with work holding fixture which eliminates use of bolts, clamps and blocking. Represented by D. K. Bartlett, A. A. Wood and L. H. Burrill.

DISSTON, HENRY, & SONS INC., Philadelphia—Comprising this company's display will be a metal cut-off saw in operation; a metal cutting band saw; a complete line of metal cutting saws of all kinds; a line of files; and other products made from steel made by that company. Represented by S. H. Disston, D. W. Jenkins, J. C. Forrest, H. A. Baxter, G. J. Ludy, J. L. Dorrington and C. H. Williams.

DIXON CO., H. L., Pittsburgh.

DONNER STEEL CO., Buffalo, N. Y.—A line of die rolled automotive parts made from steel manufactured by this company will make up the exhibits at this booth. Representatives will be W. F. Vosmer, J. W. Donner, C. A. Cherry, E. D. Pumphrey, H. C. Richardson, M. D. Morris, R. E. Sherlock, W. C. Peterson, F. H. Lammert and T. J. Woods.

DREES MACHINE TOOL CO., Cincinnati—A 5-foot general duty radial drill with a constant-speed motor on the arm will be in operation at this company's booth. E. Gilbert and J. E. Spaeth will be in charge.

DRIVER-HARRIS CO., Harrison, N. J.—A high-temperature resisting alloy for a wide range of heat treating application will be exhibited. Representatives are H. D. McKinney, G. A. Lennox, J. C. Bilek, W. E. Blythe and H. D. Tietz.

DRYING SYSTEMS INC., Chicago—A continuous automatic gas-fired annealing furnace and a high heat electric smelting furnace with transformer will be in operation at this company's booth. Representatives will be F. A. Lippert, R. E. Lippert, T. B. Cram, G. Bluemel, H. R. Fox and C. L. Tortorelli.

DURIRON CO., Dayton, O.—Acid-proof metal equipment and apparatus used in pickling and etching, plating, bright dipping and silver stripping in the laboratory; corrosion resistant hardware in various forms such as steam jets, tank outlets, valves and cocks, pipe and fittings, traps, fans, etc., will be ehibited at this booth. Representatives will be W. E. Pratt, N. E. Philpot and E. R. Sutler.

EATON ELECTRIC FURNACE CO., Taunton, Mass.

ECLIPSE FUEL ENGINEERING CO., Rockford, Ill.—Gas-fired heat treating furnaces and equipment will be operated by this company. Included will be forges, using high and low pressure; rivet heater; small boiler; immersion heater; oven furnaces; high-speed steel furnace; nozzles and mixers; pressed steel pots; and miscellaneous apparatus. In charge will be G. W. McKee, O. M. Olsen, K. A. Scharbau, E. T. Stoner, H. O. Hoffman, L. J. Strohmeyer, O. N. Sellers, Albert Stadler and H. F. Wemple.

EDLUND MACHINERY CO., Cortland, N. Y.

ELECTRIC FURNACE CO., Salem, O.

ELECTRISAL REFRACTORIES CO., East Palestine, O.—This company will exhibit refractory heating element supports such as are used in the construction of electric furnaces, ranges and heating devices. F. E. Owen, F. C. Simms and C. W. Williams will attend.

ELECTRO-ALLOYS CO., Elyria, O.—Carburizing boxes, lead pots, recuperators, furnace parts and combustion chambers made from high temperature castings will be exhibited. Represented by J. W. Henry, A. M. Miller, W. J. Hansen, E. C. White, A. L. Garford, J. B. Thomas and W. C. Whyte.

ELLIS, R. E., ENGINEERING CO., Chicago—Machine tools manufactured by a number of companies listed elsewhere under individual

Full Program for Production Meeting

Society of Automotive Engineers

TO GIVE its members the opportunity to attend the convention and exposition of the American Society for Steel Treating, the Society of Automotive Engineers will hold its annual production meeting at the Hotel Sherman, Chicago, Sept. 21-23. A concurrent meeting held at Cleveland last year was found to be most satisfactory. The program for this meeting calls for technical sessions on Tuesday morning and afternoon and Wednesday and Thursday mornings. Inspection trips have been arranged for Wednesday and Thursday afternoons. A stag carnival on Monday evening constitutes the only scheduled entertainment. Members of the American Society for Steel Treating are invited to attend meetings of the Automotive Engineers. The complete program, including technical papers, is as follows:

Tuesday, Sept. 21

MORNING

Technical session, Hotel Sherman.
"Transportation by Conveyor," Paul Phelps and N. H. Preble, Mechanical Handling Systems Inc.
"Conveyors Used in the Automotive Industry," Clarence A. Brock, Miller-Hurst Co.

AFTERNOON

Technical session, Hotel Sherman.
"Gear Steels and the Production of Automobile Gears," Walter G. Hildorf and John Bethune, Reo Motor Car Co.
"Automobile Gear Production," Charles L. Cameron, Gould & Eberhardt.

EVENING

Stag carnival, Chez Pierre Cabaret club.

Wednesday, Sept. 22

MORNING

Technical session, Hotel Sherman.
"Inspection Along the Line," A. H. Frauenthal, Chandler Motor Car Co.
Symposium on special devices for automobile inspection.—A. R. Fors, Continental Motor Cor.; P. W. Rhame, A. C. Spark Plug Co.; J. B. Scott, Yellow Sleeve Valve Engine Works; C. S. Stark, Packard Motor Car Co.; R. R. Todd, Ookland Motor Car Co.

AFTERNOON

Plant inspection, plant of Nash Motors Co., Kenosha, Wis.

Thursday Sept. 23

MORNING

Technical session, Hotel Sherman.
"What Goes Wrong with Machine Tools in Automobile Production?" E. R. Stoddard, Studebaker Corp. of America.
"Fitting the Machine Tool to the Job," O. C. Kavle, Manufacturers' Consulting Engineers.

AFTERNOON

Inspection of the Chicago plants of International Harvester Co. and Yellow Truck & Coach Mfg. Co.

company names will be in operation at this company's booth. Representatives will include Fred Fisher, A. J. Moore, I. L. Cameron, J. H. Sipchen and Herbert Bryce.

EMERMAN, LOUIS E., & CO., Chicago—A universal electric hoist operating on either alternating or direct current and built in capacities of 500 to 2000 pounds will be demonstrated by this manufacturer. In charge will be L. E. Emerman, Sam Danits and G. W. McCollum.

ENDICOTT FORGING & MFG. CO., Endicott, N. Y.—A complete line of drop forgings of all kinds will be on display under the direction of S. J. Marshall and G. B. Reed.

ENGELHARD, CHARLES, INC., New York—This company will exhibit recording and indicating instruments for the measurement of temperatures; automatic temperature, pressure, air and gas control equipment; new electric resistance CO_2 and SO_2 gas analysis units; thermocouple accessories; and thermometers. Represented by A. M. Wauters, E. S. Newcomb, J. H. Oetjen and W. O. Hebler.

EQUIPMENT MFG. CO., Worcester, Mass.—At this company's booth will be demonstrated a continuous rotary milling machine under the direction of J. L. Thornton and A. E. Shepard.

ESSLEY, E. L., MACHINERY CO., Chicago—Machine tools manufactured by a number of companies listed elsewhere under individual company names will be in operation at this company's booth. Representatives will include E. L. Essley, E. P. Essley, J. B. Hatton, Gust Olson Jr., H. A. Lyon, George Burki, C. B. Burns, F. W. Robertson, F. J. Lucas, W. S. Yale, H. J. Rice, W. C. Anderson, P. A. Graunke, N. F. Serbin, J. R. McDonald, J. B. Foley, W. A. McDonald, E. J. Burki, W. L. Strickler, R. E. Chaney, H. J. Vols and L. A. Sperry.

EX-CELL-O TOOL & MFG. CO.—Comprising the equipment on display at this company's booth will be grinding spindles for various types of grinders; drill jig bushings; general tool details; aircraft parts; and special contract production parts. In charge will be N. A. Woodworth, C. R. Alden, W. F. Wise and E. Richards.

FAIRBANKS, MORSE & CO., Chicago.

FEDERAL MACHINE SALES CO., Chicago.

FEDERAL PRESS CO., Elkhart, Ind.—Power punch presses of the open back inclinable type will be demonstrated by J. E. Loshbough and H. M. Beck.

FERNER, R. Y., CO., Washington—Equipment to be operated by this company will include high precision locating and jig boring machines, a high precision bench micrometer; and test comparators in several models. The latter machines are used for measuring and checking gages and manufactured parts. Representatives will be R. Y. Ferner, C. M. Holloway, W. S. Ryan, John Cetrule, Charles Ameel and M. Stucky.

Courtesy Aerial Photographic Service Inc., Chicago

Chicago's Imposing Michigan avenue and the Loop as seen from the air

Four main buildings in foreground on Michigan avenue are left to right, McCormick building, Straus building, Railway exchange building and Peoples' Gas building. In the right-hand corner at the bottom is the Art institute. The dome behind the Railway exchange is the Federal building and postoffice with the Merchants' Bank building directly behind and partly hidden by the dome. To the left of the Illinois Merchants Bank is the Insurance exchange and to the right rear, the Continental & Commercial Bank building. The roof of the latter partly hides the new Union depot across the river with the Burlington building looming up white to the left of the depot. These comprise the principal buildings to be seen

FERRY CAP & SET SCREW CO., Cleveland.

FINKL, A., & SONS CO., Chicago—A wide range of drop forge supplies will be on display at this company's booth. Included in the representatives are C. E. Finkl, Fred Finkl, A. R. Lane, J. C. Vance, E. H. Graham, T. P. Wallace, W. L. Goodrich, J. M. Curley, W. H. Rieger, M. R. Case and William Finkl.

FIRTH-STERLING STEEL CO., McKeesport, Pa.—Carbon, high-speed and alloy tool steels with samples of raw materials used in their manufacture will be exhibited. A complete working model of a 3-ton electric furnace from which heats will be poured three or four times daily will be a feature. Representatives will be A. E. Barker, G. J. Bauer, D. G. Clark, C. O. Ericke, L. G. Firth, R. H. Hallagan, E. P. Hedges, C. E. Hughes, Alan Jackman, D. E. Jackman, D. E. Jackman Jr., E. S. Jackman, E. T. Jackman, G. A. Jacobs, T. A. Larecy, W. J. MacFarland, Al Mattson, F. N. Mead, H. I. Moore, W. E. Nelson, W. A. Nungester, I. Olsen, L. S. Russell, W. C. Royce and J. A. Wotau.

FITCHBURG GRINDING MACHINE CO., Fitchburg, Mass.

FLATHER CO., Chicago.

FOOTE BROS. GEAR & MACHINE CO., Chicago—Equipment to be exhibited by this company will include spur-gear speed reducers; worm-gear speed reducers; herringbone speed reducers; and a number of photographs illustrating industrial applications of speed reducers. F. A. Emmons, C. G. Wennerstrom and W. A. Goelner will be in charge.

FOOTE-BURT CO., Cleveland—Three types of sensitive drills and drilling equipment will be on display at this booth. T. H. Doan Jr. and R. E. Delamater will attend.

FORD, J. B., CO., Wyandotte, Mich.—Chemical compounds used in cleaning will be demonstrated at this booth by C. S. Tompkins, C. R. Beaubien, B. N. Goodell, P. V. Ward, C. S. Lee and Chief Little Bear.

FOSTER MACHINE CO., Elkhart, Ind.—Alloy steel head screw machine with standard belt motor drive will be operated by this company. Represented by W. H. Foster, W. T. Kough, R. E. Horner, H. J. Weaver, H. E. Dillon and Carl Moser.

FOX MACHINE CO., Jackson, Mich.—Comprising equipment to be operated will be a multiple-spindle drilling machine; multiple-spindle tapping machine; and two power presses, one demonstrating shaft straightening and the other broaching work. In charge will be H. W. Fox, M. R. Fox, A. A. Riddell, A. Bullard and Frank Slater.

GAIRING TOOL CO., Detroit—Four types of counterbore and spot facers; core drills with inserts; counterbore sets; grinding fixtures for resharpening cutters; and a line of standards will be shown. George Landry, C. B. Cole and Bernard O'Meara will attend.

GALLMEYER & LIVINGSTON CO., Grand

Rapids, Mich.—Equipment to be shown by this manufacturer will consist of a universal cutter and tool grinder with automatic feed and for wet and dry grinding; a similar machine of different size; and a twist drill grinder. B. C. Saunders, J. Dekoning and H. L. Saunders will represent the company.

GAMMONS-HOLMAN CO., Manchester, Conn.—Exhibit of taper pin reamers.

GARDNER MACHINE CO., Beloit, Wis.—In operation at this booth will be an oil-gear operated, double-spindle disk grinder; an oil-gear surface grinder; several types of disk grinders; and two models of polishing lathes. Represented by L. W. Thompson, F. E. Gardner, W. B. Leishman, H. J. Gaumond, D. C. Hughes and B. H. Pratt.

GATERMAN, W., MFG. CO., Manitowoc, Wis.—Pneumatic oscillating tapping machine in two sizes and of semi-automatic and fully automatic types will be demonstrated. William Gaterman and F. H. Kind will be in charge.

GATHMANN ENGINEERING CO., Baltimore—This company's display will consist of split ingots and etched sections of steel to demonstrate the solidification of ingots.

at this company's booth. Photographs of typical installations in heat treating plants also will be on display. M. K. Epstein will be in charge.

GILBERT GRINDER CO., J. E., Milwaukee.

GISHOLT MACHINE CO., Madison, Wis.—Three models of turret lathes; and a universal model of precision balancing machine will be in operation in this booth. Represented by W. J. Hannum, E. S. Chapman, A. R. Engler, E. B. Verner, R. E. McCartney, G. H. Johnson and S. M. Long.

GITS BROS. MFG. CO., Chicago.

GODDARD & GODDARD CO., Detroit—Comprising this company's display will be a full line of standard and special profile and formed milling cutters in operation on a new plain milling machine loaned by Kearney & Trecker Corp. Billets of chrome-nickel heat treated stock will be milled. A. N. Goddard, C. S. Goddard, C. H. Wallace, E. E. Teerner, R. T. Rice, H. S. Huneke and William Fritz will be in attendance.

GORDON, CLAUDE S., CO., Chicago—Displayed by this company will be special pyrometer

plug and ring; plain and threaded gages; and snap gages. A feature of the gage exhibit will be a comparator for the rapid checking of five-fluted taps. Represented by R. B. Hubbell, A. M. Drake, E. J. Bryant, C. C. Ziegler and F. M. Bettes.

HAGAN, GEORGE J., CO., Pittsburgh—A full automatic charging and discharging furnace of the rotary type, electrically heated and in operation on various regular shaped pieces of stock material will be operated by this manufacturer. Photographs and data will describe heating equipment of coal, gas, oil and electric types. In charge will be R. B. Tally, H. C. Hanner, V. A. Hain, J. Sandberg, J. L. Edwards, C. F. Cone and H. D. Dauch.

HALCOMB STEEL CO., Syracuse, N. Y.

HALL-WILL INC., Erie, Pa.

HAMMOND MFG. CO., Cleveland—Equipment to be demonstrated by this company will be a 4-foot high-speed radial drilling and tapping machine; a pedestal-type drilling and tapping machine; and a cabinet base, ball-bearing polishing and buffing machine. W. D. Buss and Walter Osto will be in charge.

This shows the extreme end of Municipal Pier. It is approximately a mile from one end of the pier to the other

Emil Gathmann, G. A. Dornin, E. A. Whitworth and Mark Gathmann will attend.

GENERAL ALLOYS CO., Boston.

GENERAL ELECTRIC CO., Schenectady, N. Y.

GEOMETRIC TOOL CO., New Haven, Conn.—Constituting this company's exhibit will be self opening and adjustable die heads; rotary die heads; solid adjustable die heads; collapsing taps; chamfer grinding fixture; threading machine; and hollow milling tools. G. A. Denison, F. W. Gowrie and W. P. Eddy Jr. will be representatives.

GIBSON CO., WILLIAM D., Chicago.

GIDDINGS & LEWIS MACHINE TOOL CO., Fond du Lac, Wis.—At this booth will be operated a table-type horizontal boring, drilling and milling machine, and a new type internal automatic grinding machine. Representatives will be H. B. Kraut, C. Gebuhr, R. H. McCormick, A. E. Ulrick, G. A. Pabst, K. F. Gallimore, R. M. Woytych, W. E. Rutz, J. Eppler, J. Yungwirth, F. W. Krueger, William Eilers and L. Kimble.

GILBERT & BARKER MFG. CO., Springfield, Mass.—Heat treating furnaces, especially those adapted to salt bath work; oil burners and oil burning systems will be demonstrated

switches and cabinets; service magnet, special protecting tubes for cyanide; porcelain protecting tubes and other special apparatus. C. S. Gordon, A. W. Anderson and S. A. Silbermann will attend.

GOSS & DE LEEUW MACHINE CO., New Britain, Conn.—An automatic chucking machine will be demonstrated by this company under the direction of S. T. Goss, J. J. Spring and C. N. Sabin.

GOULD & EBERHARDT, Newark, N. J.—This company will operate a manufacturing hobbing machine cutting spur gears; and a 32-inch shaper cutting die blocks. In charge will be F. G. Eberhardt, James Craig and John Allwood.

GRAY, G. A., CO., Cincinnati—A 36 x 36-inch x 10-foot heavy-duty open-side planer equipped with two rail heads and side head and fully equipped with traverse to all heads will be demonstrated by this manufacturer. Representatives will be August Marx, Tell Berna and Philip Leisinger.

GREENFIELD TAP & DIE CORP., Greenfield, Mass.—The exhibit of this company will consist of an unusually large internal chucking grinder; high speed ground thread taps; manufacturing gages of the limit type, both

HANDE WRENCH SALES CO. OF ILLINOIS, Chicago—A new line of monkey wrenches and pipe wrenches will be on display at this company's booth. Represented by F. M. Luther Jr., W. M. Craig, G. E. Hemphill and A. G. Seabury.

HANSON-WHITNEY MACHINE CO., Hartford, Conn.—Comprising this company's exhibit will be a universal semiautomatic thread milling machine; universal vertical tool and die shaping machine; rapid precision centering machine; sharpening machine for taps, hobs, reamers, milling cutters, etc.; universal measuring machine; and a display of taps, thread gages, hobs, thread rolling dies, etc., all finished after hardening. J. W. Johnson and C. A. Laruidsen will be in charge.

HEALD MACHINE CO., Worcester, Mass.—This company will demonstrate three new type machines including an automatic internal grinding machine; an automatic rotary surface grinding machine; and a hydraulic cylinder grinding machine. Company representatives will be J. N. Heald, S. T. Massey, M. F. McCormick, O. A. Johnson and J. G. Wonn.

HEAT TREATING SUPPLY CO., Sandusky, O.

HEBARD, W. F., & CO., Chicago—Electric industrial trucks manufactured by the Baker-

Raulang Co. will be displayed at this company's booth. This equipment is described elsewhere under the latter company's name. Represented by W. F. Hebard.

HEIM GRINDER CO., Danbury, Conn.—A centerless grinding machine with equipment for both straight through and shoulder grinding will be in operation at this booth. F. M. Angevin, C. Booth, R. Krametz and C. Previdi will be in charge.

HEPPENSTALL FORGE & KNIFE CO., Pittsburgh—Photographs of this company's plants and of the line of products which are manufactured will be displayed by means of an electrically operated device. Representing the company will be C. W. Heppenstall, S. B. Heppenstall, A. L. Wurster, A. J. Porter Jr., G. I. Allen, Frank Moyer, George Desautels, D. Stewart, I. E. Walton, B. B. Weinberg, R. B. Heppenstall, J. P. Bindyke and J. A. Succop.

HEVI DUTY ELECTRIC CO., Milwaukee—Exhibited in operation by this company will be a new and improved rotary drum-type furnace for continuous heat treatment of small parts; two new type of tool room furnaces; and several laboratory furnaces. All equipment is electrically heated and automatically controlled. Photographs of recent installations also will be available. In charge will be E. L. Smalley, R. L. Corbett, T. B. Bechtel, F. A. Hansen and C. H. Stevenson.

HIGH POWER TOOL CORP., Jackson, Mich.

HIGH SPEED HAMMER CO. INC., Rochester, N. Y.—A complete line of high-speed riveting hammers and motor driven sensitive bench drill presses will be exhibited by this manufacturer. Represented by W. P. Andrus, F. W. Marcellus, H. A. Moore, E. S. Roscoe, E. C. Barber, E. F. Meyering, H. M. Starke and D. M. Sutter.

HOEFER MFG. CO., Freeport, Ill.—A piston drilling machine will be demonstrated at the booth of this company. C. A. Hoefer and Paul Andree will attend.

HOLCROFT & CO., Detroit—Metallurgical furnaces will be exhibited by this company. Photographs, drawings and technical information relative to these furnaces will be available. Represented by C. T. Holcroft, R. T. Cadwell, H. L. Ritts, C. L. Joy, C. H. Martin, H. M. Smith and A. Ruckstahl.

HOOVER STEEL BALL CO., Ann Arbor, Mich.—Including in equipment to be shown by this manufacturer will be a special testing machine for fatigue of bearings; bearings running under excessive load and speed until failure; a stereopticon machine showing manufacture of ball bearings; a display cabinet of aluminum, brass, bronze, monel-metal, stainless steel and brinell balls; and tapered and spiral wound roller bearings. In charge will be H. D. Runciman, C. W. Lighthall, S. A. Strickland, H. G. Freeland and H. T. Morton Jr.

HOSKINS MFG. CO., Detroit—This company's exhibit will consist of an electric tool-room furnace with automatic temperature controlled pyrometers; toy electric train operated by electromotive force from thermocouples; and a display of resistance wire. W. D. Little, C. S. Busse, W. A. Gatward and C. S. Kinnison will attend.

HOUGHTON, E. F., & CO., Philadelphia.

ILLINOIS TOOL WORKS, Chicago—Included in this display will be milling cutters; reamers; broaches; special form tools; ground and unground hobs for gears; splines; ratchets; worms and thread milling; testing instruments for hobs and gears; washers and locking wire terminals. Represented by J. J. Hotz, E. E. Valy, D. M. Murphy, R. P. Liner, S. O. Bjornberg, J. M. Gribbie, and H. J. Land.

INTERNATIONAL MACHINE TOOL CO., Indianapolis—Machines to be operated at this company's booth include a 24 to 26-inch turret lathe working on bar stock; and a 16 to 18-inch lathe. In charge will be T. P. Dickinson and V. V. Caywood.

INTERNATIONAL NICKEL CO., New York—Nickel and its alloys in its commercial forms and application will be shown by this company. A number of photographs and complete literature will be available. Representatives will be F. S. Jordon, R. A. Wheeler, A. J. Wadhams, P. D. Merica, R. L. Suhl, T. H. Wickenden, Charles McKnight Jr., J. S. Vanick, R. G. Waltenberg, D. M. Houston.

INTERSTATE IRON & STEEL CO., Chicago—This display will illustrate the growing use of alloy steel in locomotive construction. Included in the display will be a small locomotive on which the essential alloy steel parts are indicated; new locomotive parts; iron and mild steel parts which have failed in service; demonstration of elongation in iron and alloy steel bolts; and a demonstration of the bending moment between iron and alloy steel bolts. In charge will be W. J. MacKenzie, E. Larned, L. L. Solger and W. H. C. Carhart.

IRON TRADE REVIEW, Cleveland—This booth will be fitted up as a restroom, which those attending the convention are invited to make their headquarters. Representatives will be C. J. Stark, H. Cole Estep, J. D. Pease, F. V. Cole, E. L. Shaner, E. F. Ross, F. B. Pletcher, W. W. Maloney, L. C. Pelott, A. L. Klingeman, John Henry, W. H. Blair and W. J. Chapman.

JARVIS CO., THE CHARLES L., Gildersleeve, Conn.—High speed tapping devices, quick change chucks and collets and stud setters will be exhibited. M. N. Jarvis and F. C. Barker will be in attendance.

JESSOP STEEL CO., Washington, Pa.—Specimen tool steel, bars, sheets and plates and specimens of finished products from tool steel will be exhibited. Those in attendance will be S. A. Grayson, F. T. H. Youngman, R. K. Greaves, E. V. Vogeley, A. G. Lambert, V. M. Wellman, J. M. Curley, W. J. Frederick, A. C. Leete and Messrs. Schaffran and Dawson.

JONES & LAMSON MACHINE CO., Springfield, Vt.—Several flat turret lathes, two automatic lathes, a screw thread comparator and automatic dies and ground thread taps will be shown by this company. H. S. Beal, J. C. Price, F. L. Watkins, J. L. Reilly, C. S. Seaver and G. S. McClellan will represent the company.

JONES & LAUGHLIN STEEL CORP., Pittsburgh—The new alloy steel recently developed by this company will be exhibited as well as its entire line of hot rolled and cold finished steel and parts manufactured from it. The company will be represented by W. B. Todd, J. D. Allen, R. W. Light, G. C. King, R. J. Stayman, M. A. Blessing and A. A. Wagner.

KANE & ROACH, Syracuse, N. Y.—A roll core wire straightener directly connected to an electric motor will be shown in operation. H. W. Kane will be in charge.

KEARNEY & TRECKER CORP., Milwaukee—Milling machines in operation on actual aluminum castings. A new type of plain milling machine will be shown under power.

KELLER MECHANICAL ENGINEERING CORP., Brooklyn, N. Y.—A full automatic tool room machine equipped with a jig boring attachment, several flexible shaft machines, and other tools for die work will be operated. J. F. Keller, S. A. Keller, Jules Dierck, A. J. Benson, Charles Bitter, Henry Schreiber, P. D. Brown, G. I. Croll, Herman Raudisch, Leon Desaultels and Maurice Mayer will attend.

KELLY REAMER CO., Cleveland—A complete line of adjustable tools for railroad and industrial manufacturing and repair work will be shown, including a new line of expansion block unit tools, single point boring bars, multiple blade roughing cutters and reamers and adjustable boring and facing heads. Special line boring, reaming and facing tools for large diameter work will be exhibited. H. C. Putnam, E. W. Putnam, F. S. Hartwell and C. B. Cole will represent the company.

KEMPSMITH MANUFACTURING CO., Milwaukee—A universal production milling machine will be shown in operation. The company will be represented by Messrs. Goetz, Wollaeger, Radermaker, Rowinski, Czerwonky, Steck and Nieman.

KEYSTONE LUBRICATING CO., Philadelphia—This company will show in operation a line shaft and crank motion with bearings lubricated by a safety system with tell-tale alarm. Lubricators and accessories also will be shown. The company will be represented by J. H. Conlon, P. Cassady, G. W. Hall, M. C. Schwenk, P. J. Nash, T. B. Little, Vic. Berguson and F. D. Street.

KING REFRACTORIES CO. INC., Buffalo—High temperature cements and baffles will be shown by this company, which will be represented by W. J. Dinwiddie, H. J. Gebhardt, S. C. Smith and O. D. Horton.

KINGSBURY MACHINE CO., Keene, N. H.—A single spindle vertical semi-automatic machine for cross drilling and burring pins will be shown in operation, as will also a universal machine built up from direct motor driven

(*Continued on Page* 624)

1919—Chicago Chapter Officers—1926

T. E. Barker
Chairman

A. F. Boissoneau
Vice Chairman

A. G. Henry
Secretary-Treasurer

IN SEPTEMBER, 1919, the American Steel Treaters' society, now the American Society for Steel Treating, held its first convention and exhibition in Chicago. The officers of the society were T. E. Barker, president; A. F. Boissoneau, vice president; and Arthur G. Henry, secretary-treasurer. These gentlemen were largely responsible for the success of the attempt at holding an exposition of heat-treating equipment in connection with a convention. Mr. Henry is credited as being the father of the exposition idea. Last May the Chicago chapter of the American Society for Steel Treating elected as officers for 1926 the same gentlemen, naming Mr. Barker, chairman; Mr. Boissoneau, vice chairman; and Mr. Henry, secretary-treasurer. Apparently, the chapter felt it needed unusually capable leadership for the eighth annual convention, so it drafted a trio that had proved its worth. Incidentally, it is interesting to note that in 1919 the American Steel Treaters' society consisted of about 200 members, today the Chicago chapter has on its rolls 319.

Furnaces Important in Production of Roller Bearings

By F. W. Manker

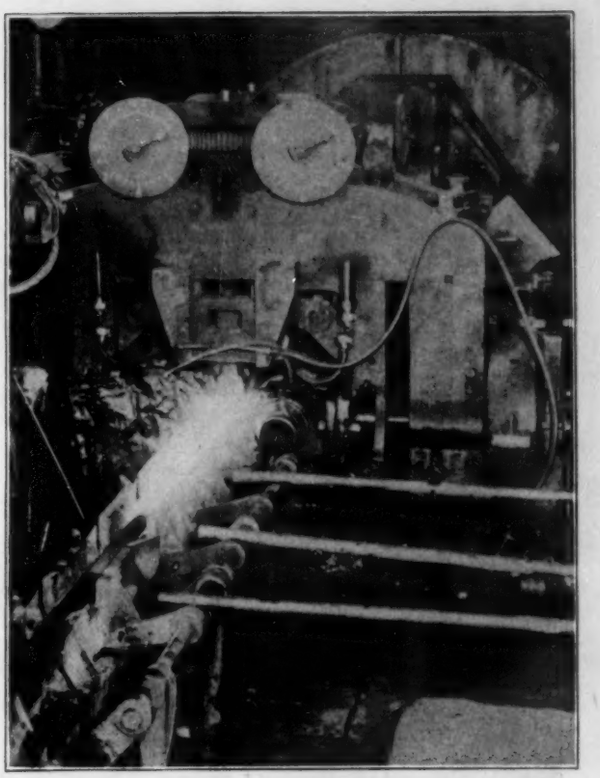


Fig. 2—Piercing Billets Into Seamless Tubing

CONSIDERABLE study has been made in recent years to reduce frictional losses in machinery and equipment having a revolving motion. In many steelworks charging cars and ingot-mold cars equipped with roller bearings have been instrumental in lowering production costs. Blast furnace skip cars and cinder and iron ladle trucks provided with roller bearings have been the means of reducing transportation costs. This type bearing also has supplanted bearings of the plain type on other subsidiary equipment used by the iron and steel industry, being more efficient from the standpoint of upkeep and cost of repairs. Roller bearings of the type manufactured by the Timken Roller Bearing Co., Canton, O., consist of four parts, namely, the cone, the rollers, the cage to properly space the rollers about the cone and the cup which fits over the cone and rollers. The utmost precision in every operation of manufacture and assembly is necessary to insure their perfect op-

The author, F. W. Manker, is associated with the Surface Combustion Co., New York.

FIG. 1—GAS-FIRED FURNACE IN WHICH STEEL ROUNDS ARE HEATED PREPARATORY TO BEING PIERCED

eration. They are frictionless within the limits of one-tenth of one per cent.

The Timken Roller Bearing Co. has five plants located in Canton and Columbus, O., Walkerville, Ont., Canada; Birmingham, Eng.; and Paris, France. The home plant is at Canton, O., which with the Columbus works has capacity for manufacturing 132,000 bearings every day.

Electric Furnaces Employed

The company makes special analysis alloy steel in five heroult-type electric furnaces which turn out 235 tons daily. This steel is poured into molds and the resulting ingots, after being heated uniformly in gas-fired soaking pits, are bloomed or reduced in size in a 35-inch, 3-high blooming mill.

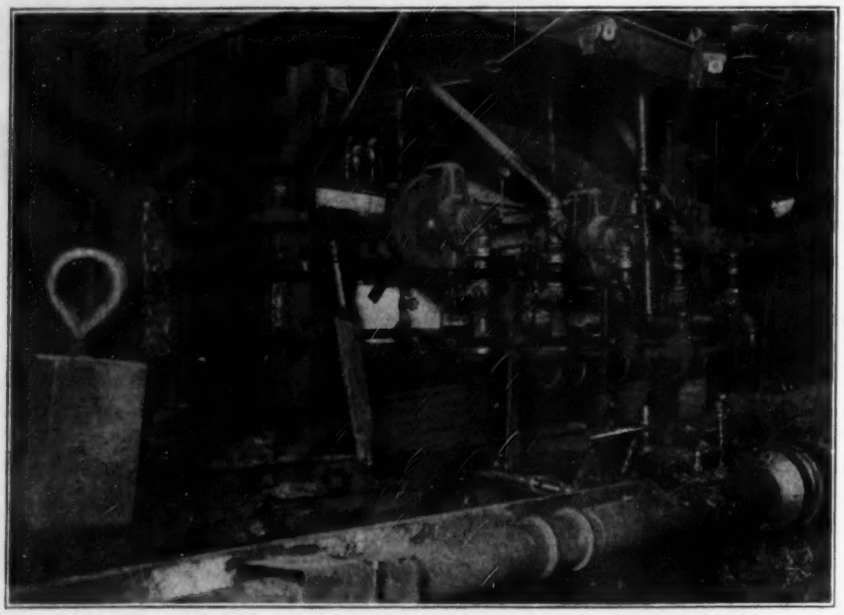


FIG. 8—ONE END OF THE PIERCING MILL FURNACE SHOWING THE GAS BURNER EQUIPMENT

The new 35-inch blooming mill was the first completely Timken-equipped mill ever built. Roller bearings are provided in the 10 and 15-ton Morgan-type cranes; in the mechanism of the ingot pusher, to carry the thrust load on the screws which operate the soaking pit covers; and in the table rollers of the mill and shear. Operating at capacity this mill will turn out 1200 tons every 24 hours which is far in excess of the capacity of the plants it serves. The reserve capacity is used for custom work.

Blooms from 6 x 7 to 9 x 10 inches are put into a gas-fired furnace about 10 feet wide and 95 feet long and heated to about 2300 degrees Fahr. They are passed through a 22-inch mill which rolls them into bars or rounds from 2 to 7 inches in diameter and from 20 to 75 feet long. The material then is known as tube or roll stock. These bars or rounds are sent to the 10, 12 or 16-inch merchant mills to be rolled into rods or flats. The rolling mills occupy a space about 2000 feet long.

The resulting rods are fed to 27 roll headers or upsetting machines, capable of turning out 1,800,000 bearing rolls in a 24-hour day. These machines were designed especially for the Timken plant and do the work that ordinarily would require about 300 screw automatics.

Rounds destined for the piercing mill are hot sawed to length, heated to about 2300 degrees Fahr. in the piercing mill furnace, and run through the piercing mill, where they are made into seamless tubes for cups and cones. The furnace is 66 feet long, 10 feet wide and 3 feet high, interior dimensions and is equipped with the gas firing system designed, patented and manufactured by the Surface Combustion Co., N. Y. Water cooled velocity burners are used, three firing through the center roof and three through the discharge end. These burners have a throat diameter of 7⅛ inches and a capacity of 9130 cubic feet an hour each. The capacity of the furnace is 17 tons of work an hour. The hearth slopes from the charging to the discharging end so that the round bars roll through continuously. The gas is delivered under a pressure of 20 pounds and the exact amount of air for the required combustion is inspirated through venturi tubes. A slightly reducing atmosphere in the furnace is essential and is made possible by the automatic air-gas proportioning device. Aside from other improvements this method of firing increased the maximum capacity of this furnace more than 50 per cent over the old method.

A test run of a month's duration was made on the piercing mill furnace and the total gas consumption for the month was 6,389,647 cubic feet. This was natural gas of approximately 1000 B.t.u. per cubic foot and the furnace was run on single turn, being shut down at 4 or 5 o'clock each day and relit at about 10 o'clock for the following day's run. Hence, the gas consumed during the hours of operation for the month amounted to only 4,223,625 cubic feet or 68 per cent of the total. During the same period 1974 tons of steel tubes were treated while the tonnage charged was 2154 tons indicating a yield of 95 per cent. On the basis of tonnage charged the gas consumption was 1960 cubic feet per ton of work while the overall fuel consumption, including heating up, was 2880 cubic feet per ton. On the basis of finished tonnage these figures were 2136 and 3235 cubic feet per ton respectively. The stock used in this test was round and ranged from 5 to 6½ inches in diameter. It was charged in single row. The maximum rate of operation for the furnace was 16½ tons of work treated per hour.

Wall Thickness Is Uniform

In the piercing mill the red hot rods are rotated and pulled over a plug which pierces a hole through them longitudinally. They then are rolled in a 22-inch, 2-high, automatic rerolling mill to reduce and obtain the proper wall thickness, and then conveyed to a reeling machine which smoothes the tubes, inside and out, and makes the wall thickness uniform. A high-speed conveyor takes the tubes to a reheating furnace which is 22½ feet wide and 24 feet long and has an inclined hearth so that the work may pass through by the force of gravity. This furnace is fired with equipment built by the Surface Combustion Co., including four water-cooled velocity burners with a throat diameter of 7 inches. The tubes are heated from 1200 to 2000 degrees Fahr. and the furnace has a capacity from 10 to 12½ tons of work an hour. A reducing or deoxidizing atmosphere is maintained and a material reduction in loss from oxidizing scale thus is obtained. The tubes range from 3 to 6 inches in diameter at the start but are reduced in these processes to sizes varying from 2 to 4½ inches.

The cups and cones are cut and formed in 700 automatic machines at the rate of 297,000 a day. These

parts then are packed in bone meal and put into gas-fired carbonizing furnaces where they are heated to 1700 degrees Fahr. for varying periods of time according to the depth of case required. After being hardened in other furnaces they are sent to the grinding department where nearly 1000 grinding machines are in use.

Multiple perforating machines have been developed to manufacture the cages, and these machines punch out all the pockets of the cage simultaneously. For years each cage pocket was punched out separately and no matter how accurately this machine operated, there was always a slight creeping of the metal, so that the first and last pockets varied. The multiple perforating machine overcame this. In order that the rolls may fit these pockets precisely, the cages are winged, that is the sides of the pockets in the cages are pressed to a contour coinciding with the contour of the rolls.

The final operations include assembling, running in and sound testing. An interesting machine called the audion sound testing machine, has been developed, which measures the sound of a running bearing by means of a microphone, registering on a dial. A noisy bearing is, of course, rejected.

Scrap Is Reclaimed

A novel method of reclaiming scrap material has been developed by the Timken company in the form of a briquetting machine, which was the first successful machine of its kind ever built. The savings netted from this machine paid the original cost in less than a year. In the Canton and Columbus plants more than 100 tons of steel shavings and borings are made every day. If these were to be charged directly into the furnaces they would be lost, the effect being much the same as throwing scraps of paper into the fire. When compressed into a solid bale or briquette, practically all of the steel is reclaimed. Prior to the invention of the briquetting machine two scrap balers were used and 18 men, working 20 hours a day, were able to handle only 72 tons at the Canton plant. The new machine, having a capacity of 112 tons in 16 hours, can handle easily the scrap from both the Canton and Columbus plants and the operating crew is cut to seven.

More than 15 miles of belting is required to operate the different machines. Cutting, cooling, lubricating and fuel oil is consumed in the quantity of 2,500,000 gallons annually.

The chemistry and metallurgy of the steel is guarded by eight inspections and analysis and these rigid inspections are maintained throughout all subsequent operations. More than 30 per cent of the manufacturing personnel is employed in protecting the quality and standards—the precision in grinding, the accuracy of angles of cone, cup and roll, etc. Machines measure the angle of the rolls, others separate the rolls by sizes, a roll varying as much as 0.001-inch being rejected.

Two distinct engineering staffs are maintained. The sole duty of one is plant engineering, that is, in the developing of new processes, new machines, etc., while the other is concerned with the application of Timken type bearings to all types of machines, motor cars and whatever equipment is concerned with revolving motion.

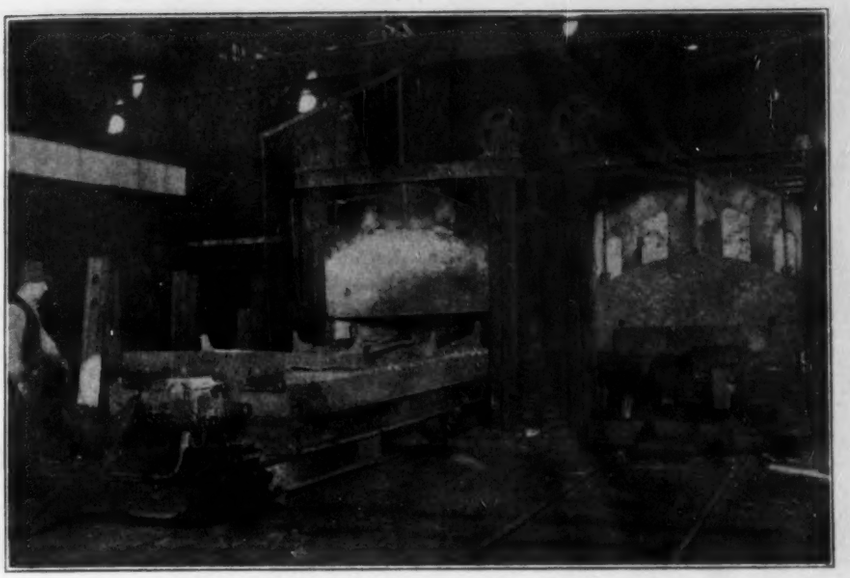


FIG. 4—FURNACES OF THE CARBOTTOM TYPE SHOWING THE MOTOR-DRIVEN CHARGING ARRANGEMENT

Will Roll Strip Steel

Rome Strip Steel Co. recently was incorporated under the laws of New York state with capital of $150,000 and will manufacture cold rolled strip steel in Rome, N. Y. The equipment consists of 10-inch and 12-inch mills and auxiliary equipment with a capacity of 1000 tons per month. This equipment is now being installed and it is expected that operations will start early in September. H. B. Hinman, with the Trumbull Steel Co., Warren, O., for four years and previous to that with Stanley Works, New Britain, Conn., for eight years, is general manager of the new company.

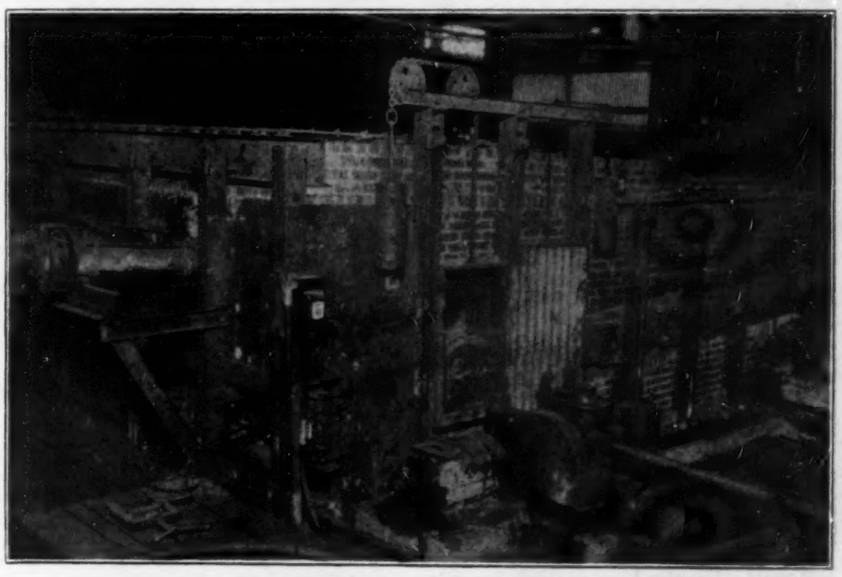


FIG. 5—FURNACE FOR REHEATING SEMIFINISHED TUBES. THE PUSHER IS SHOWN IN THE FOREGROUND

DESIGN of an automobile and the selection of steels to be used in its construction are closely interwoven. Determining the best steel for each part involves more than the noting of an S. A. E. specification number on the blueprint of the particular commodity to be manufactured.

In the accompanying article, the author, who is automotive engineer, development and research department, International Nickel Co., New York, outlines the factors influencing design and illustrates how compromises must be made to obtain the best results. The article is presented through the courtesy of the International Nickel Co., and is abstracted from "Automobile Design and Automotive Steels," No. 7 in a series of technical articles on nickel steel published by the company. The original paper by this title appeared in the Journal of the Society of Automotive Engineers for May, 1925, and a revision was presented before a number of chapters of the American Society for Steel Treating. The accompanying abstract contains excerpts believed to be of particular interest to steelmakers, steel treaters and manufacturers of automobile parts.

Selecting the Proper Steels for Use in Automobile Parts

By Thomas H. Wickenden

WITH the mass production of automobiles today and their thousands of duplicate parts, specifying more expensive material than is needed to perform safely the duties required, although it may increase the cost of a finished part by only a few cents, will mount into large figures when a year's production is considered. But material low in first cost is not always the cheapest in the end. Metallurgists must meet engineering requirements with materials that will give the minimum cost to the finished assembly. To be on a sound economic basis, therefore, the use of alloy steels must prove desirable because of lower final costs, as well as through greatly improved performance.

These results may be secured by utilizing any of a number of properties developed by alloy steels.

1. The greater strength of alloy steel may be utilized to reduce the size and weight of a given part and with it that of adjacent parts.
2. Greater uniformity of properties secured resulting in lower rejection of parts produced in manufacturing.
3. Taking advantage of some of the special properties developed by alloy steels, such as wider hardening range, improved wearing properties, deep hardening, higher fatigue properties, greater toughness, easier machining for a given strength, more uniform carburizing and hardening, less warpage in hardening, freedom from grinding cracks and many others. The utilizing of these properties will result in greater ease of manufacture; they may make possible the use of a new design or greatly improve the life and performance of the car.

An engineer likes to design unrestrictedly, in accordance with his ideal of producing the best possible machine for the purpose. Commercial considerations, however, are encountered and it is necessary to compromise the design to meet them. The particular field into which the car is going, the proposed selling price, the size and annual capacity of the plant at which the car is to be produced, all are factors influencing design.

For example, the selection of the smallest possible diameter of ball bearing for the front end of a transmission will result in thin overhanging walls of the transmission drive pinion as it is often necessary to drill this out for the pilot bearing of the transmission spline shaft. This long thin wall section will give trouble from warping or cracking in the hardening room. It may be a case of deciding between the extra cost of a slightly larger bearing or the probable care and trouble required on the transmission drive pinion in the hardening room. If the smaller bearing is selected, the metallurgist has at least had a chance to enter into the matter with his eyes open; and the judicious use of radii and a gentle change of section will help reduce the difficulty to the minimum.

Where Metallurgist Serves

By entering at the designing end, the metallurgist knows the history of a piece from the beginning, can intelligently specify metallurgical limits and can assume, to a large extent, the responsibility for the machine's standing up. To properly do this requires an analysis of the stresses involved in each important part, considered from every possible angle. This is a large task, but most engineering departments have a man who specializes in these calculations and will usually welcome co-operation in applying the results.

It is poor policy to specify a material for a new design merely because the material has previously been used in a similar part, or because a certain other car is using it, unless a detailed analysis has been made in each case to reduce the loads involved to unit stresses. Service records of the vital parts of an old design should be analyzed to determine whether time has proved the original proportions to be correct and, if so, the unit stresses which they were subject to should be determined in order to check the calculations on the new design.

An analysis of failed parts returned to an automotive laboratory will show occasional failure from imperfect material such as improper chemical analysis, the presence of seams, internal flaws, pipes, dirty steel, etc. Other parts fail from improper heat treatment, although with the close control exercised in most plants today this is occurring with less frequency. When recurring breakages are encountered in the same part, they are invariably of a fatigue nature and are often caused by highly localized stresses. This type of fracture is unmistakable; it invariably starts from one or more points, progressing by small increments, leaving a line at each stopping-point that often resembles a contour line on a map. The solid cross-sectional area finally is greatly reduced. The fatigue crack gives a notch effect to the piece, so that the failure of the remaining area is sudden and the fracture resembles that of a notched impact-specimen.

In considering the fatigue failure

of steel, it is necessary to remember the influence of tool-marks, rough finish, undercuts, sharp corners and threads in producing highly localized stresses.

Sharp Corners Dangerous

Most engineers do not fully realize the magnitude of these localized stresses when changing section. Professors Moore and Kommers have shown that in changing section on a 0.49 per cent carbon steel, heat treated, the fatigue limit was as follows under different conditions:

Change	Fatigue limit lbs. per sq. in.	Per cent of original
1-inch radius	47,500	100
¼-inch radius	44,000	92
Square corner	23,500	49
90-degree "V" notch	19,200	40

From this data, it is evident that if a ¼ radius is specified and the machine shop makes a square corner the loading-carrying capacity of the piece from a fatigue standpoint is reduced almost 50 per cent and when the piece is used under normal loading its life will be extremely short.

It has been customary to figure factors of safety on many parts under a static load; that is, the load when the car is standing still, resulting from the weight of the rated passenger load, and of the car itself when ready for the road with the various systems filled with water, oil and gasoline. On many parts this method will show factors of safety of a fairly high order, much higher than really exist. On steering-knuckles factors of safety of from 20 to more than 40 have been shown by this method while as a matter of fact the steering-knuckles were breaking in service from fatigue failures, showing that the method of calculation was incorrect. In the actual driving of a car the maximum stresses are causes by dynamic loading; in case of a steering-knuckle when the car drops in a chuck-hole or when the car turns a corner rapidly.

The question rises how to do this. Any attempt to figure the stresses when the car is moving at a selected speed and hits a chuck-hole of a certain depth or an obstruction of a certain height leaves one hopelessly involved, but by a fundamental analysis of the stresses involved, formulas can be developed that show the limiting stresses which can be used on various parts and still insure successfully standing up in the hands of the public.

A typical case will show the factors to be considered in ordinary design. From a study of previous designs it is estimated that a new car ready for the road would weigh about 2900 pounds and from reliable data it is calculated that the bending moment in the center of the axle is 26,700-inch pounds. This having been determined, a decision must be made whether the axle center is to be of carbon or of alloy steel. If alloy steel, such as S.A.E. No. 3135 low-chrome nickel steel, is to be used, the permissible fiber stress may be considerably higher than could be used for straight carbon steel. A smaller cross-sectional area of the axle can be used, with a correspondingly lighter weight. There are limits, however, to which this substitution can be carried; it is necessary to have a certain amount of stiffness in the axle center; otherwise, the deflation of the axle under running conditions will destroy the proper alignment of the wheels, resulting in rapid tire-wear.

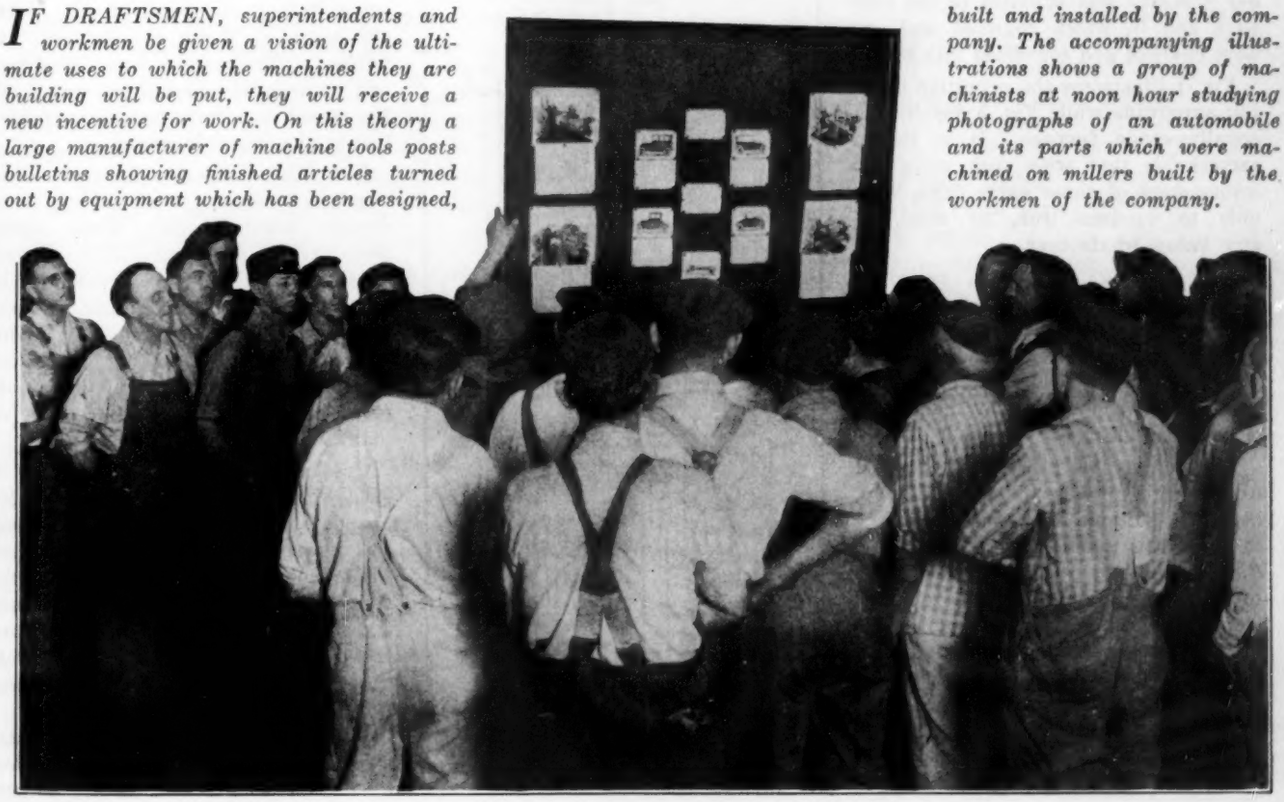
Stiffness Is the Same

The stiffness of alloy and of carbon steel is the same; that is, Young's modulus of elasticity is about 30,000,000 pounds for each; if, therefore, an alloy steel with smaller cross-sectional area is used, the depth of the web and the width of the flanges must be increased to secure the same stiffness. But here practical forging limitations must be considered, such

(*Concluded on Page* 571)

Show Role of Machine Tools in Automobile Building

IF DRAFTSMEN, superintendents and workmen be given a vision of the ultimate uses to which the machines they are building will be put, they will receive a new incentive for work. On this theory a large manufacturer of machine tools posts bulletins showing finished articles turned out by equipment which has been designed, built and installed by the company. The accompanying illustrations shows a group of machinists at noon hour studying photographs of an automobile and its parts which were machined on millers built by the workmen of the company.



Industrial Furnaces

A Treatise on the Design, Construction and Function of Modern Melting, Heating and Treating Units

By Charles Longenecker

Chapter I—Historical Background of Modern Furnace

THE earliest industrial furnace concerning which there is any authentic information was the catalan forge so named because it was first operated in Catalonia, a province in Spain. This furnace was also in operation in the French Pyrenees in 1293 but unquestionably before that time various metals were extracted from their ores in rudely constructed fires or forges.

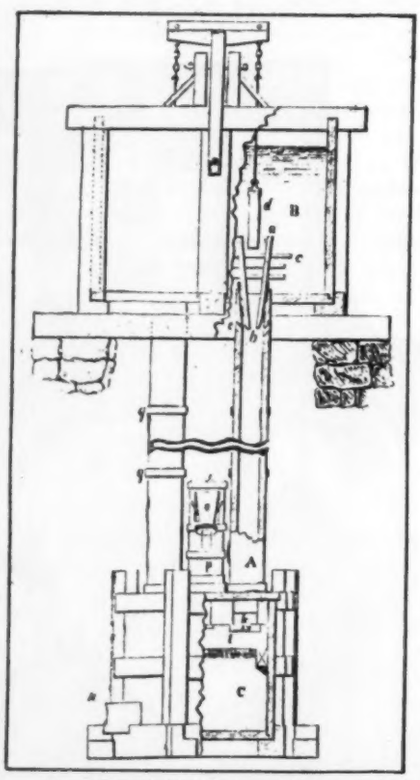
This type of furnace exemplifies the progress of the art of iron manufacture up to that time and presents the underlying principles of modern blast furnace operation. From the catalan forge of 1293, by definite progressive steps, was evolved the blast furnace of the present. Each unit comprised equipment, by means of which air under pressure was supplied to the furnace and in which charcoal and ore were charged and converted into metal.

Fig. 1 illustrates the primitive blowing apparatus while Fig. 5 depicts the equally crude furnace. It is indeed remarkable that with such tools, the ironmasters of those early days, were able to produce iron, or steel, of any value whatsoever.

The blowing apparatus, called a trompe which was an Italian invention, was not the original source of air supply for the catalan forge. It was invented in 1640 but before this time bellows, operated by hand, energized the air.

The trompe shown in Fig. 1 required a waterfall of 11 to 15 feet and, hence, a suitable site was necessary to meet this requirement. The tank, *B*, was built with a capacity sufficient to hold approximately 10 tons of water. This water was allowed to fall through the tree, *A*, into the windbox, *C*. The wedges, *a*, and plug, *d*, controlled the flow of water from tank *B* into the tree *A* and by this control the quantity of air drawn through the holes, *e*, was varied. It was a rough adaptation of the venturi principle for inducing air. The air drawn in was carried along with the water into the windbox, *C*, and discharged from this through the opening, O, into the copper tuyere from which it passed into the furnace. Obviously many objections could be raised to this method of operation. The air carried with it a large quantity of moisture which feature was most objectionable. It is stated, on the other hand, that the pressure of from 1½ to 2 pounds a square inch was uniform and could be regulated easily.

A furnace operated continuously for a period of 144 hours and in that time



From Percy's Metallurgy of Iron and Steel
FIG. 1—FRONT ELEVATION OF A TROMPE OR BLOWING ENGINE

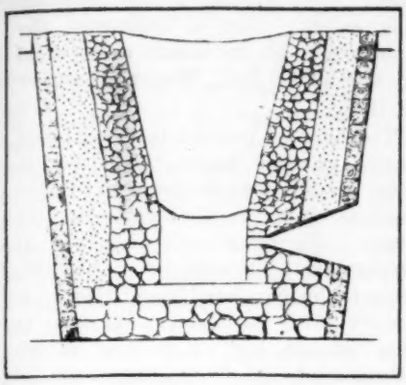
24 casts were made, each heat requiring six hours from charging to drawing. The lining was formed carefully of granite, gneiss, mica schist or some other refractory material as the shape of the interior exerted a marked influence on the operation. Assuming a heat to have been drawn and the walls of the furnace to be hot, charcoal was charged and on top of this a rich ore was spread.

The first stage of the process began about 10 minutes after charging with an air pressure of 12 ounces. More ore and charcoal were added at various intervals until after four hours the fifth stage was reached. By this time the air pressure had been increased to 24 ounces, the ore had been well melted and the masse, or lump, had commenced to form. After six hours of firing the process was finished. The masse was withdrawn and immediately hammered into form. To reheat the iron it was necessary to use the same furnace.

The skill of the ten men who were required to do the work varied. Some merely were laborers while others were skilled in the art. The progress of the operation was determined by the appearance of the flame and the color and fluidity of the slag. This latter method of judging conditions in the furnace applies with equal force to blast furnace operation of today.

One heat required an ore charge of 1074 pounds and consumed 1201 pounds of charcoal. From this ore 334 pounds of bar iron was produced which quantity is 31 per cent of the weight of the ore charged. To burn the charcoal 6174 pounds of air passed through the furnace. The charcoal charged per gross ton of output was 8064.

By proper charging and manipulation it was possible to produce either a hard or a soft iron as the follow-



From Percy's Metallurgy of Iron and Steel
FIG. 2—OSMUND TYPE FURNACE. VERTICAL SECTION THROUGH THE TUYERE

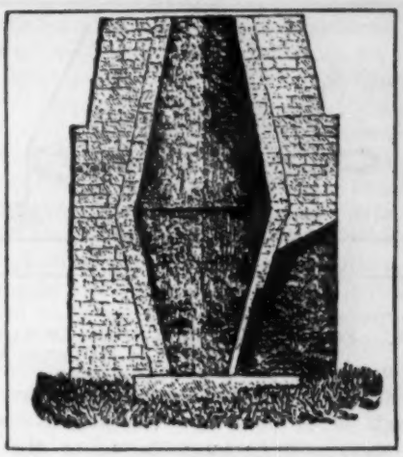
ing analysis taken from Percy's *Metallurgy of Iron and Steel* shows:

Element	Soft grade per cent	Hard grade per cent
Metallic iron	94.87	93.216
Manganese	0.521	0.025
Silicon	0.037	0.020
Carbon	trace	0.420
Slag	4.562	6.319

As an indication of the desire to improve on the design of the catalan forge the Osmund furnace, shown in Fig. 2, was built. The idea evidently was to increase the depth of the furnace and to secure a greater return from the waste gases which in the catalan forge left the surface of the charge at a high temperature. Information concerning the operation of this furnace is lacking.

The next step was more radical and shows a furnace which in miniature, closely resembles the blast furnaces. This furnace, named the stuckofen, was of German design and not only conformed to the blast furnace in general lines but also gave a product which was of the same character, namely, cast iron. It was necessary to decarburize this iron before it could be worked. The interior lines are shown in Fig. 3. The height of this furnace ranged from 12 to 16 feet while the diameter at the middle was 8 feet. The diameters at top and bottom were 1½ and 2½ feet respectively.

As in past practice the tuyere was made from a copper plate bent to form; the hearth was made of a siliceous conglomerate. A bellows, driven by a water wheel, furnished the blast. Records show an output of 1 gross ton of iron with a fuel



From Turner's Metallurgy of Iron
FIG. 3—LONGITUDINAL VERTICAL SECTION OF A GERMAN STUCKOFEN

INTRODUCING A NEW SERIES OF ARTICLES ON INDUSTRIAL FURNACES

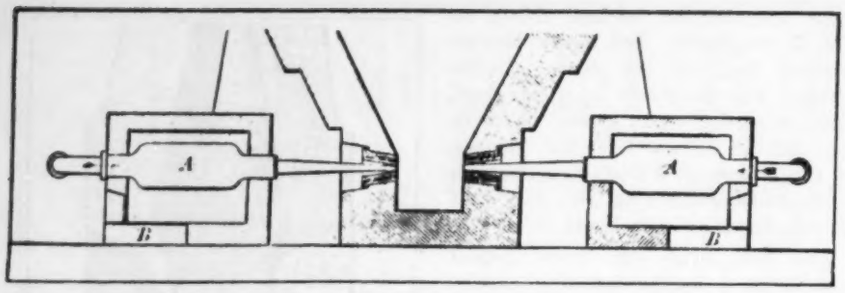
ANALYSIS of developments in the making and treating of steel during the past decade clearly indicates that much of the progress made is due in a large measure to improvements in furnaces and their accessories. To test this statement, one has only to compare the average melting, heating or treating unit of the prewar period with the corresponding equipment of today.

Believing that intelligent selection and efficient operation of industrial furnaces constitute a vital element of successful manufacturing practice, IRON TRADE REVIEW *has commissioned an experienced furnace engineer to prepare a series of articles dealing with all types of industrial furnaces in a comprehensive way. The accompanying introduction, which is historical in character, is the first installment of the series. Subsequent articles will appear in alternate issues of* IRON TRADE REVIEW.

The author, Charles Longenecker, will discuss furnaces from the standpoints of design, construction, product, fuels and method of firing, function, and their position in relation to the industry as a whole.

Four classes of furnaces will be treated:

1. *Melting furnaces, which convert ore, pig iron or scrap into ingots, castings, or a mass of some form ready for subsequent heating. These furnaces are:*
   - *Open hearth, for steel ingots, steel castings, malleable castings*
   - *Puddling*
   - *Malleable melting*
   - *Crucible melting*
   - *Charcoal or knobbling*
   - *Busheling*
2. *Intermediate or heating furnaces, including*
   - *Soaking pits*
   - *Pile heating furnaces*
   - *Heating furnaces for small ingots*
   - *Continuous furnaces for small ingots*
   - *Forging furnaces for ingots*
3. *Reheating or finishing furnaces, including*
   - *Reheating furnaces for blooms, slabs, billets and miscellaneous use*
   - *Continuous furnaces for billets, car wheel blanks and blooms*
   - *Forging furnaces for blooms, billets and miscellaneous use*
   - *Sheet and pair*
   - *Pipe and tube*
   - *Bolt and nut*
   - *Rod heating*
   - *Bending*
   - *Welding*
4. *Heat treating furnaces, including*
   - *Annealing*
   - *Carburizing*
   - *Hardening*
   - *Normalizing*
   - *Miscellaneous*



From Turner's Metallurgy of Iron

FIG. 4—CYLINDRICAL OVEN EMPLOYED BY NEILSON FOR HEATING THE TUYERES SEPARATELY

consumption of 9500 pounds of charcoal.

No record is available as to the exact date when the blast furnace first was employed. Fordyce in his *History of Iron and Steel* states we have no evidence to show when the complete transformation of the blast bloomery into the blast furnace was effected but it probably occurred during the early part of the sixteenth century.

The development of the blast furnace appears to be a natural one starting with the catalan forge which closely resembles that part of the furnace below the bosh. In these forges the atmosphere near the tuyeres was oxidizing but higher up the carbon dioxide coming in contact with hot carbon was reduced to carbon monoxide and this, escaping at the surface of the charge, burned. The first attempts to increase the height of the walls and add more burden resulted in failure because the weight was too great for the customary manner of operation. This was true of the Osmund furnace until the cause of the failure was established. Means soon were devised for overcoming the weaknesses and the blast furnace became a reality.

Refractory Lining Used

According to data secured from a reliable source the lining of one of the early Dowlais stacks required 320,000 common and 80,000 fire brick. Some of the early Welsh furnaces had a content of 7000 cubic feet and held 150 tons of material. Fordyce mentions that the pressure at which air is sent into the hearth varies with the nature of the fuel and the season of the year. The density of the air at the tuyeres is given by an authority as 3 to 4 pounds with 3500 cubic feet of air as the quantity required per minute.

A comparison of the Dowlais furnace of 1791, blown with cold blast, and the furnace of 1831, blown with hot blast, gives the following weights of material as required for the production of 1 ton of pig iron in the two furnaces:

	1791 Cold blast, pounds	1831 Hot blast, pounds
Coal for coking	14,112	5600
Ironstone, calcined	6,496	6272
Engine coal	3,920	1176
Limestone	4,256	2016
Coal for kilns	.....	728

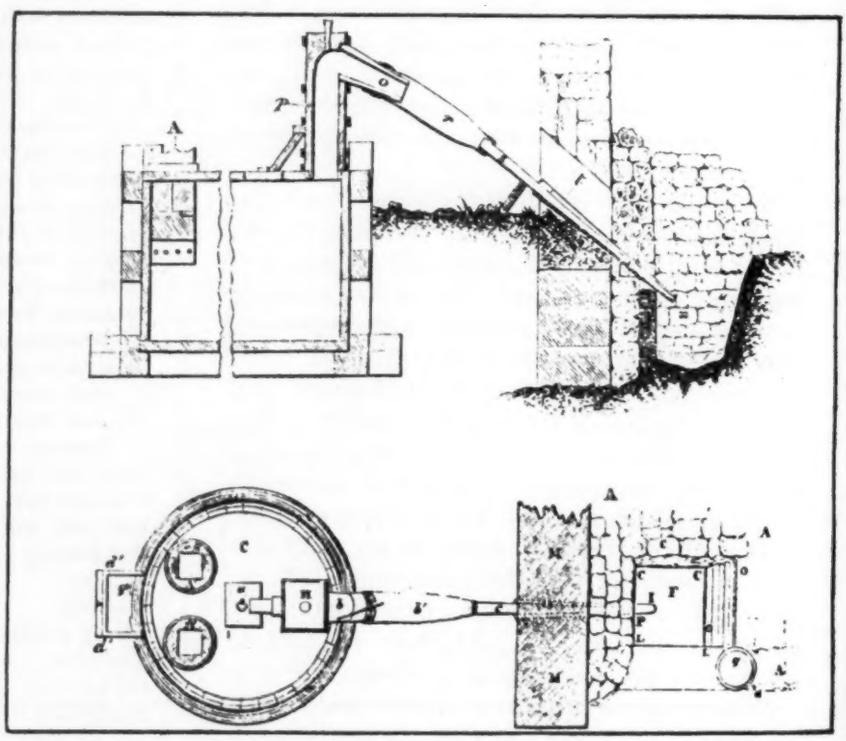
In 1791 a blast furnace at Clyde produced 17 tons weekly while in 1839, using hot blast, the weekly output was 52 tons.

To James Beaumont Neilson must be awarded the credit for the introduction of hot blast. In 1828 he was granted a patent on an improved application of air to produce heat in fires, forges, and furnaces where bellows or other blowing apparatus are required. The original Neilson air heater was made of wrought iron but was not designed to allow for expansion and contraction of the metal. The second design remedied this defect. Fig. 4 illustrates the construction of the heater as installed at the Clyde Iron Works, Glasglow in 1829.

The limit of preheat in the original design was 300 degrees Fahr. but in later installations 600 degrees could be reached with no ill effects to the heater. In recent years a type of recuperator, resembling Neilson's second design, has been placed in service with satisfactory results as long as too high a preheat is not attempted.

Develops Hot Blast Stove

Neilson's type of heater was followed in 1860 by the Cowper hot blast stove. This was a distinct advance and made available temperatures ranging from 1000 to 1500 degrees Fahr. This stove employed the regenerative principle as applied by Siemens to regenerators in connection with open-hearth furnaces. The hot blast stove changed blast furnace practice radically and introduced a new element which caused a decided modification of equipment as well as operation. The Whitwell stove followed that of Cowper and many other types have since been presented. Modifications in the air passages and gas combustion chambers differentiate the various types. Some stoves are of the two-pass type while others are designed for three passes.



From Percy's Metallurgy of Iron and Steel

FIG. 5—LONGITUDINAL VERTICAL SECTION OF A TROMPE AND CATALAN FURNACE AND PLAN VIEW OF A TINE AND CATALAN FURNACE

Selecting Proper Steels for Auto Parts

(*Concluded from Page* 567)

as the depth of the impression that can be filled out in the dies without undue loss from scrap, the thickness or, more correctly, the thinness of the web, and the minimum draft-angles that can be used without having the work stick. Going beyond certain limitations will materially increase the production cost.

In the axle under consideration, it is decided, because of the above-mentioned limitations, to use a cross-section having a moment of inertia on a horizontal axis of 0.886, and to apply the values that have been obtained to the flexure formula, which gives a value of 29,000 pounds per square inch fiber stress.

S.A.E. No. 1040 straight carbon steel can be heat-treated so that it will have an elastic limit of approximately 70,000 pounds, which, under the maximum load, would give a factor of safety of 2.41. Comparison of these values with those similarly calculated in former practice will show them to be about the average and to be ample.

On a heavier car, say from 3000 pounds up, the axle center can be designed so as to increase the depth of the I-beam and the width of the flanges. Sufficient stiffness can thus be secured and the foregoing limitations observed so that considerable saving in weight can be made by taking advantage of the greater strength of alloy steel.

A tubular design of the front-axle center lends itself much better to requirements of stiffness of section, so that a very lightweight axle can be made with 3.5 per cent nickel-steel tubing, heat-treated. This is especially desirable in cars with four-wheel brakes, as front-wheel brakes introduce high torque-moments in the axle that an I-beam section is not nearly so well suited to resist as is a tubular section. In the larger passenger-cars and in the truck field, 3.5 per cent nickel and chrome-nickel steel front-axle centers are extensively used.

What Is Best Steel?

After the stresses are all figured and it is decided where alloy steels will best meet the requirements the next question is what kind of alloys to use. A minimum variety is desirable to avoid mistakes by substitution and maintain a low inventory. The steels should be of low cost and easy to make to insure quality from the steel mill. They should be available on short notice either from the mill or from warehouse stock in case of emergency.

The nickel and nickel-chrome group are widely used and present a complete range to satisfy most every requirement in automotive construction. These steels are considered standard by the steel mills; they require little more care in making than a good grade carbon-steel, as the alloys are added in the furnace insuring a uniformity in properties not possible with ladle additions.

Three steels will satisfy most requirements—S.A.E.-2315 for carburized parts; 3135 for forged structural parts, and 2345 for oil hardened gears. When extreme conditions are met, these steels can be supplemented by S.A.E.-2512— 5 per cent nickel for carburizing; 3435 for structural parts, and 3250 or 3450 for oil hardened gears.

The use of the 3½ and 5 per cent nickel steels is recommended in such parts as steering-knuckle pins, steering arm balls, steering gear parts, wrist pins, camshafts, case hardening gears and shafts and bolts which are intended for spring assemblies. For forged structural parts, 3135 chrome-nickel steel is recommended. Due to its low cost it gives high physical properties per unit cost. This is especially true when the nickel is kept between 1.25 and 1.75 and the chromium 0.60 to 0.95 per cent instead of the usual S.A.E. range. This steel has a wide hardening range. If the carbon content is kept within 0.30 to 0.35 per cent, water quenching is recommended on most all parts. On parts of heavy and uniform section, such as axle shafts, water quenching can be used over the entire range. Oil quenching is recommended on very small parts and those with uneven section. The drawing heat should not be hurried; time should be given to heat the steel through uniformly and thoroughly. This procedure insures uniform machining properties. When physical properties between 140,000 and 200,000 pounds a square inch are required S.A.E.-3235 or 3435 are recommended.

For oil-hardened gears 2345 is extensively used with very satisfactory results, although slightly better properties can be secured with the more expensive 3250, 3345 or 3450 steels.

Annealing Sheet Steel at High Temperature Without Scaling

DEVELOPMENTS in manufacturing processes employing steel sheets have gradually imposed greater responsibility on producers until now the standard of quality demanded is higher than ever before. Blue annealed sheets made by heating to 1100 to 1400 degrees in an open furnace as they came from the mill were once deemed satisfactory for drawing work but now greater uniformity than is possible by this method is generally demanded.

Efforts to improve this process have led to the use of higher temperatures, which have manifest advantages but also involve difficulties in handling the sheets.

Work started about two years ago on a commercial basis has resulted in the development of a process and furnace, protected by patents controlled by the International Furnace Co., Keenan building, Pittsburgh, which enables sheet steel manufacturers to anneal steel at a much higher temperature than ever before and avoid raising the scale.

This furnace first heats the sheets, one, two or three at a time to 1800 degrees Fahr. or higher; then cools them while enveloped in the products of combustion to 1400 degrees Fahr. before discharging the sheets into free atmosphere. The sheets next are discharged on a conveyor leading to a roller leveler which piles them in stacks of governed height where they cool to room temperature.

The conveyor which carries the sheets through the furnace is somewhat similar to the old walking beam principle but yet entirely different in that there are no stationary members in this conveyor and the sheet travels at a uniform speed, adjustable to suit the order being treated. The mechanism is so arranged that one member of the conveyor cannot pick the sheet from the member about to return for its next stroke without first being up to the exact speed of the advancing member before any contact with the sheet is made. As a result there is no pitting nor any resemblance of marring of the surface of the sheet and no heat is lost as in the water cooled or chain types of conveyor.

The furnace operates with a lower fuel consumption than is possible when water cooled shafts and disks are employed. In order to anneal all grades and gages of sheets it is essential to be

(*Concluded on Page* 623)

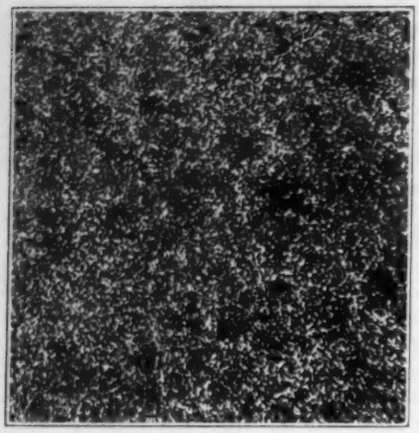


FIG. 1—PHOTOMICROGRAPH OF STEEL WHICH WAS NOT ADAPTABLE TO CERTAIN MACHINING. X100

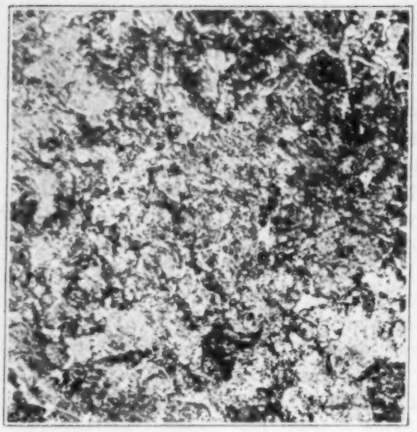


FIG. 2—PHOTOMICROGRAPH OF STEEL WHICH MACHINED BETTER THAN STRUCTURE SHOWN IN FIG. 1. X100

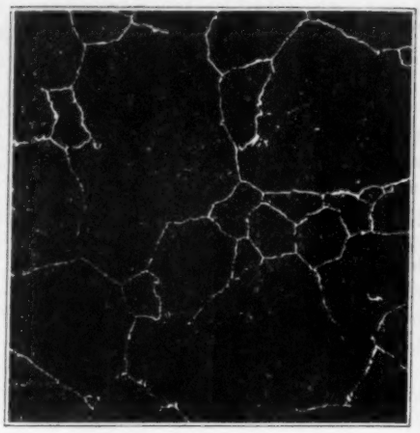


FIG. 3—PHOTOMICROGRAPH OF A NORMAL STEEL ACCORDING TO EHN'S CLASSIFICATION. X100

Metallography Helps Steel Producers Solve Customers' Problems

By Stanley A. Richardson

METALLOGRAPHY has been defined as the general study of metals and alloys. In their wider applications, certain principles of this science embracing the physical chemistry of alloying, have been applied in a general way in steelmaking. In its more restricted sense as meaning the microscopic and macroscopic study of prepared specimens of metal, metallography may be said to be a comparatively recent addition to the routine equipment of the steel mill. To the maker of alloy steel of the quality to meet the requirements of the automotive industry, it has become indispensable.

The alloy steel metallurgist employs metallography ordinarily in three ways, namely in service work for the steel user to assist him to obtain the best result with the steel he purchases; as a routine check on finished steel to insure that only the highest quality material is applied on orders; and, in research work designed to improve the mill products, develop new steels for specific purposes, or remedy existing difficulties in plant practice. A few examples may serve to illustrate the importance of modern microscopic metallography.

A customer advises that he is having difficulty with certain heat-treated axles, and forwards a sample to the laboratory. The microscope reveals a patch of the untreated hot-rolled structure in the center of the axle where upon the laboratory advises the customer to increase his time of heating to insure more complete penetration of the heat and the difficulty disappears.

Another customer advises that he does not obtain satisfactory results in production machining of a certain grade of forging steel although the brinell hardness is satisfactory. A microscopic study of his steel in connection with his machining operations indicates that the customer's annealing practice, although producing the required softness, is not giving the proper microstructure for maximum machinability. The customer's annealing practice is changed and a vast improvement is noticed. Fig. 1 illustrates the structure that did not respond favorably to the particular type of machining, while Fig. 2 shows the structure that produced the better results.

A gear manufacturer states that certain ring gears are subject to abnormal distortion and breakage. After deep etching in boiled acid, a macroscopic study is made of the flow lines in the forged gear which reveals that due to an irregular manner of handling the forging blank in the die, a plane of weakness comes parallel with a highly stressed area in the gear causing the difficulty. The remedy is indicated.

The foregoing examples of one field

The author, Stanley A. Richardson, is metallurgist, Interstate Iron & Steel Co., South Chicago, Ill.

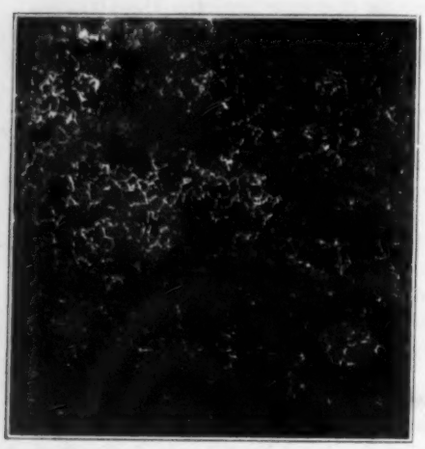


FIG. 4—PHOTOMICROGRAPH OF AN ABNORMAL STEEL ACCORDING TO EHN'S CLASSIFICATION. X100

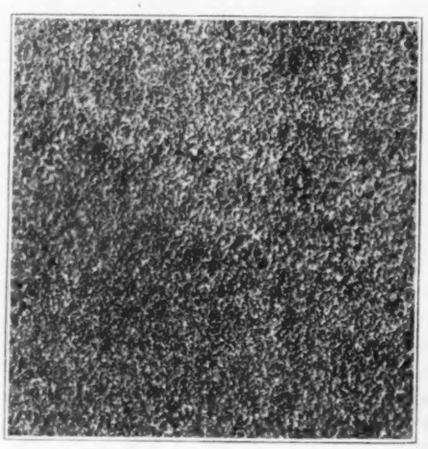


FIG. 5—PHOTOMICROGRAPH OF A SOUND BAR AFTER DEEP ETCHING IN BOILING ACID. X3

FIG. 6—PHOTOMICROGRAPH OF STEEL SHOWING A STREAK OF ALUMINUM OXIDE. X100

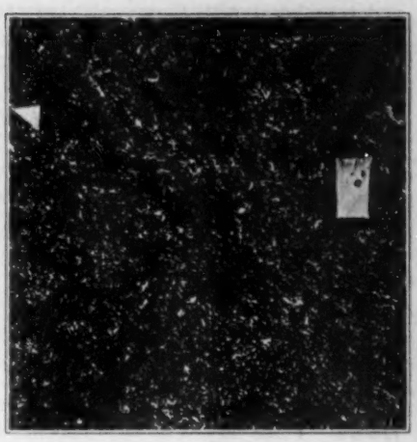


FIG. 7—PHOTOMICROGRAPH OF STEEL SHOWING MINUTE CUBIC CRYSTALS OF ZIRCONIUM NITRIDE. X600

of application of metallography by the steel mill laboratory serve incidently to illustrate something of the type of service that the alloy steel companies render their customers. The alloy steel manufacturer knows that alloy steel will withstand severe service if fabricating treatment has been executed correctly. This service insures the proper working conditions and benefits the customer.

The second field of application of metallography by the steel mill, as previously mentioned, depends in part upon the fact that many steel consumers have incorporated a clause regarding microstructure in their specifications, and in part upon the desire of the steel mill to ship only the proper material for the particular type of service demanded. The best known of the metallographic specifications, or at least the one that has been most widely discussed, is the so-called Ehn test. This test prescribes that normal steel, that is, steel that will react most favorably to cause carburization and subsequent heat treatment, must possess a certain microstructure after a standardized routine of carburization.

Fig. 3 shows the case of a normal steel and Fig. 4 the case of an abnormal steel according to the original classification of Ehn. A tendency on the part of various authorities has existed of late to revise this classification somewhat, so that the matter may be said to be in a more or less unsettled state at present. Many steel consumers specify a degree of freedom from solid nonmetallic inclusion. The alloy steel manufacturer ordinarily makes an examination regarding this condition whether specified or not. Another common metallographic specification relates to porosity or the degree of soundness, and is based on the appearance of a cross section of a bar or billet after deep etching in boiling acid. Fig. 5 shows the appearance of a sound bar after this test.

The application of metallography to research work in the steel mill, in general, follows the same practice as in other lines. The grain size, microstructure, and other metallographic features of new steel are studied

Sell "Precision" Rather Than Equipment

HELLO, is this the 'Precision' Tool company?"

"Yes."

"Can you settle an argument for us regarding the accuracy of a lead screw?"

"Surely, that's our business, accuracy. What's the problem?"

"Well, we have just bought a new lathe that was guaranteed to cut threads to limit of 0.0001-inch in lead. Our tool man claims that the threads cut on it have an error nearer 0.001-inch and that the lead screw on the lathe is out that much. We don't want to send the machine back and have them find us wrong. What can we do?"

"Send the lead screw to us. We'll check it."

The screw was checked and the lathe manufacturer found to be in the right; result, a possible controversy avoided and a good friend made for the dealer.

For that's what the Commercial Tool Co., Cleveland, is; a dealer, only of a different type. It has developed a service that serves as an example of what specialization can do in aiding intelligent distribution. It has assembled under one roof 25 lines of equipment designed to secure or measure accuracy. The collection includes bench lathes, bench milling machines, ground and collapsible tops, reamers, gages, optical and mechanical measuring instruments and other small tools and gages for determining accurate data. It is not unresasonable to think that the dealer of the future may become more of a specialist than a representative of one or a dozen lines of equipment. Perhaps we may find dealers who will concern themselves only with equipment for drilling, turning, grinding or milling.

WHERE DOCTOR PRECISE MAKES HIS DIAGNOSIS. ONE CORNER IN THE DISPLAY ROOM OF THE COMMERCIAL TOOL CO., CLEVELAND.

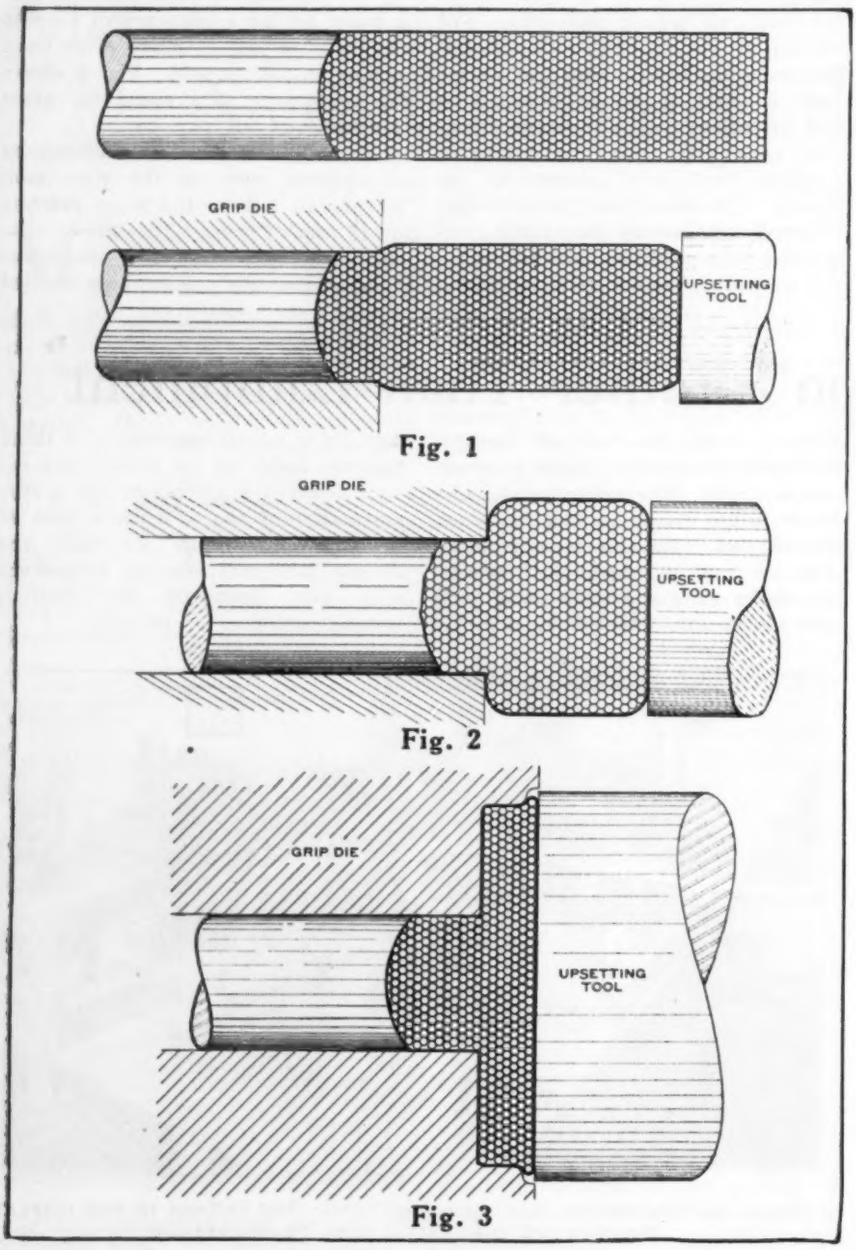
and correlated with the usual physical tests and with various phases of plant practice. One of the most useful metallographic tests for the research metallurgist is that which establishes the identity of the different solid nonmetallic inclusions that may be found in steel. From tests of this character, the effect of different tapping temperatures, slag conditions, deoxidizers, etc., may readily be ascertained. Fig. 6 shows a streak of aluminum oxide, such as may be found in the top discard of ingots when aluminum is used in scientifically compounded deoxidizers. Fig 7 shows minute cubic crystals of zirconium nitride, desposited when zirconium is used in deoxidizing mixtures.

Metallography is of considerable assistance also in studying various features of rolling mill practice. The heating and rolling of alloy steel is an art in itself. Obviously the rolling mill treatment of S. A. E. 2512 steel differs from that of S. A. E. 5150 steel. By revealing the manner of the flow of metal, the effect of the different temperatures and the efficiency of heating, metallography can assist in establishing these proper treatments.

In the past chiefly by reason of unwarranted or impractical conclusions, metallography suffered frequently at the hands of its friends. It is necessary in all cases to consider that the microscope is no better qualified than the individual behind the eye-piece. Properly applied, metallography will pay for itself in any field where the making, shaping, treatment or application of steel is recognized as a science worthy of serious study.

Open Mine at Union Rate

The Stanley coal mine of the Lorain Coal & Dock Co., located near Blaine, Belmont county, West Virginia, employing 400 men, was to be reopened this week, on a union basis, paying the Jacksonville wage scale. The mine has been idle four months. Operators in the Ohio coal fields recently have been in correspondence with union representatives seeking a conference for modification of the scale, but officials of the unions have refused to alter their position.



ACTION OF UPSETTING TOOL ON STEEL

Upsetting Places Fibers in Compression Not Tension

By Charles D. Harmon

JUST what happens to steel when it is upset in a forging machine is not clearly understood by many interested in forging methods. Owing to the fact that seams in steel are revealed more readily in a forging machine than under a hammer, there is a feeling in some quarters that upsetting tends to open up the fibers of steel.

The upsetting action is only able to swell the diameter of a bar by

(*a*) increasing the cross section of the fibers or grains;

(*b*) arranging them more closely together, or, in other words, increasing their mass; or

(*c*) by merely rearranging the position of the grains as a result of the pressure applied.

In any case, the result is one of

putting the grains under compression, which of course is a refining tendency.

As an indication that the fibers of steel are not spread apart in upsetting, examine a bar of steel 1 inch in diameter, not confined in a die impression but extending in the open 3 inches beyond the face of the gripping dies and which had been upset for a short distance. A uniform increase in diameter extends throughout the length of the upset portion, indicating that the fibers of the steel were under compression and had been swelled uniformly. Had the upsetting tended to open up the fibers or grains, one would expect such a forging made in the open to spread out into a more spherical shape.

The increase in the diameter of a forging is accomplished by the upsetting action of the grains or fibers and not by the separating or opening up action of them. This can be accomplished only by putting the grains in the center as well as in the outer portion of the forging in compression.

Upsetting can be likened to the action on an imaginary bar of steel bars, in which the bars are merely rearranged and the desired shape secured by bringing the balls into the compression necessary to force them into the desired shape of the forging. Fig. 1 and 2 shows that the balls are caused to flow into the impression not by spreading them apart but by putting them in compression one with the other. Fig. 3 shows what would happen if the operation were continued to form a flange.

Fig. 4 is from an etching of an upset of a round ball on an iron bar. Such a shape, combined with the fact that iron is fibrous, would be expected to show upsetting at its worst advantage—particularly in view of the fact that the stock is not confined in the impression until the very last of the stroke. The illustration makes clear, however, that there is a thickening of all the fibers of iron and slag. The center portion shows a greatly increased thickness; and it can be clearly seen that the fibers near the very outer edge of the upset are also thicker than in the original bar.

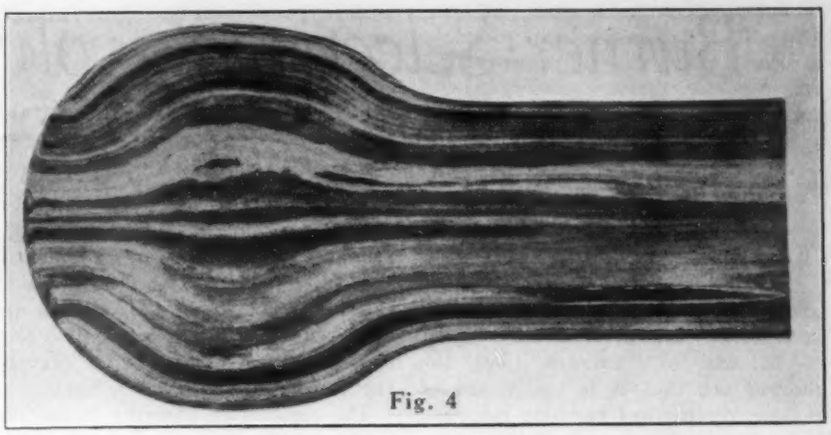


Fig. 4

FROM AN ETCHING OF AN UPSET OF A ROUND BALL ON AN IRON BAR SHOWING THE THICK FIBERS NEAR THE OUTER EDGE OF THE UPSET

Because seams or cracks sometimes develop around the outer edge of a forging, there is a belief in some quarters that the outer portion of an upset is in tension. This, however, is not the case, as the entire upset is in compression—although it is true that this compression will open up any seams that may exist in the original bar.

This illustration shows clearly that the compression tendency does extend to the very outer edge of the upset, and serves to confirm our statement that the entire upset is in compression.

Another consideration which serves to improve the relative quality of machine forgings is that they are invariably made from rolled bars, which of course, have the advantage of the working in rolling. The fact must be kept in mind, also, that it is almost invariably the practice to upset stock in the forging machine by pressure upon the end. Consequently, the stock is forced out uniformly in all directions, with the result that there is a uniform strength around the periphery of the forging.

Experiments by Massey show that a gear blank made from stock having the grain running lengthwise gives strength in the teeth at the different positions as indicated in Fig. 5. If the gear is made from a blank in which the grain runs endwise, the strength of the teeth is fairly uniform, as indicated in Fig. 6.

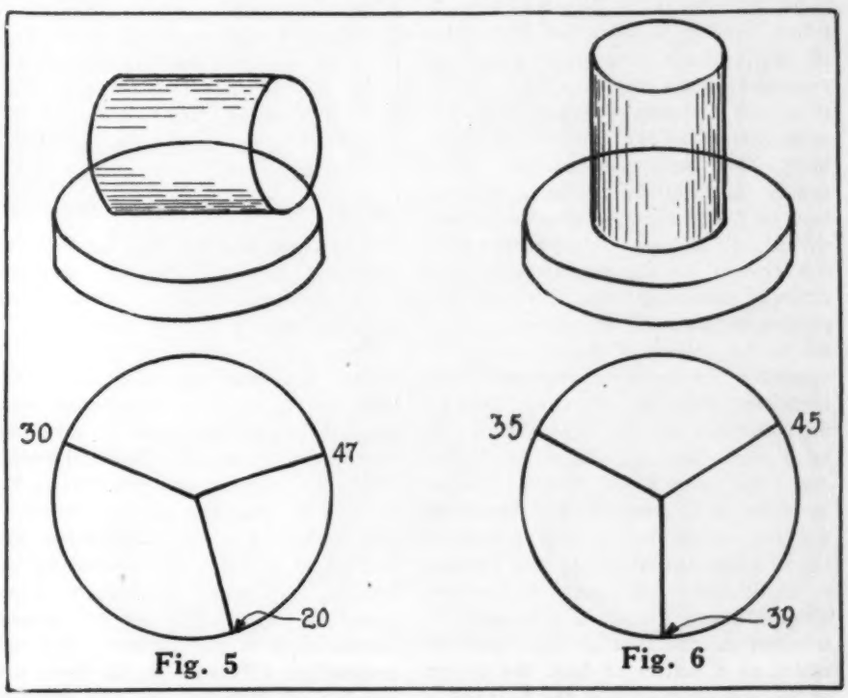


Fig. 5 Fig. 6

DIAGRAMS WHICH DEPICT THE STRENGTH IN GEAR TEETH AT DIFFERENT POSITIONS WHEN GRAIN RUNS LENGTHWISE AND ENDWISE

Outlines Developments in Machine Forging

NATIONAL MACHINERY CO., Tiffin O., has just published a paper read by Charles D. Harmon, engineer, National Machinery Co. at a recent meeting of the production standards division of the American Plan association, Cleveland. Mr. Harmon described progress made in machine forging. The accompanying article is abstracted from that part of Mr. Harmon's paper which deals with the action of steel when upset in a modern forging machine.

Burner Selection Involves Study of Entire Heating Problem

WHEN the operator of an oil-fired industrial furnace says he is having trouble with the burner, it is well to look at the entire installation. His problem may appear to be one of "burners," but the chances are that it is really one of heating, cooling and handling material, and of providing comfortable working conditions for the operatives under specific conditions.

It is the design and method of operating the furnace—not the burner—that invariably determines the final result. Unless the furnace is properly designed to provide and maintain uniform application of heat to the charge; efficient utilization of heat within the furnace; accurate control of temperature, furnace atmosphere, spent gases and fuel consumption; efficient handling of material to be heated; and comfortable working conditions for the operatives, the application of any type of burner is of doubtful value. Burner equipment should be selected to harmonize with these essential conditions rather than to suit existing furnace conditions, which may, or may not, be suitable for production of a quality product at low cost.

Knowledge of Design Essential

As a rule it is impracticable to select burners without full knowledge of the furnace construction and operating requirements in order to determine the number, position, size and arrangement of the combustion chambers that are essential for their proper application, particularly with fuel oil. The common practice of applying oil burners to furnaces without regard to the fundamental conditions governing the heating operation as a whole represents an unwarranted source of waste and is responsible for most of the prevailing inefficient methods of using fuel oil in industrial heating operations. It is a rare fuel oil installation that does not permit of better heating methods, fuel economy and improved working conditions for the operatives by suitable alteration of the furnace structure without a change of burners. Unsatisfactory results are usually attributed to the fuel or the "burner" when, as a matter of fact, the design or method of operating the furnace is usually the source of the difficulty.

Oil burners do not "burn oil" in the sense that gas is burned, as ordinarily applied to industrial furnaces. The oil itself does not burn. It is oil, gas and air in the form of a combustible mixture that really burns and converts the energy in the fuel to heat.

The combustion chamber is the real "oil burner" or "gasifier" in which the combustible mixture is formed, ignited and transformed into heat. The combustion chamber must be properly located and designed with provision to control the supply of fuel and all the air; to maintain uniform combustion with variable flow of fuel and air; and to distribute the products of combustion without direct blast or other injuiry to the charge.

Inasmuch as oil must first be converted into gas and the gas mixed with air to form a combustible mixture, it is apparent that an oil fired-furnace is, in reality, the combination of a gas producer, represented by the combustion chamber and the "burner," and means for the application and utilization of heat, represented by the heating section of the furnace structure. In this respect an oil furnace differs from a gas furnace with corresponding difference in the form and number of burners, and the number, position, size and shape of combustion chambers in the installation.

The real efficiency of an oil burner is mainly mechanical, as with any other type of spraying, mixing or injecting valve. It may assists in the heating operation by preparing the oil for gasification by atomization or otherwise; and as a means for injecting and regulating the supply of oil and air beyond this the burner is relatively unimportant, except in operations where the form of the blast or flame, is a controlling factor.

The supply of fuel and air varies with the nature of the heating requirements, the furnace design and the method of operation. The burner bears about the same relation to the operation of the furnace that the spray valve of a carbureter does to the operation of an automobile. In fact, a burner cannot properly be considered the equivalent of a carbureter unless it handles fuel in the form of gas or vapor and is arranged to automatically vary the supply of air with the supply of fuel, a condition rarely found in industrial heating operations.

Various Factors Influence Cost

A burner, like a carbureter, is but a means to an end. The combustion of fuel, or the generation of heat, is but one phase of the operation as a whole. The quality and cost of the finished product is the determinative test in industrial heating operations just as the over all cost per ton mile may be considered the test in the operation of a motor truck. Loss from poor combustion of liquid or gaseous fuels in the average industrial furnace is relatively small, although loss from poor application or utilization of the resultant heat is usually great. Better furnaces and better methods of handling them must be provided to produce better and cheaper operating results through more efficient use of heat energy.

These points are so simple and fundamental, and have been conclusively demonstrated so often in practice, that it is difficult to reconcile the prevalent notions relative to the function of oil burners with the facts governing the conduct of industrial heating operation. This illogical situation may be explained by the tendency of the average man to think in terms of combustion or

Results Best Test of Heating Efficiency

WHILE an effort is made in the accompanying article to indicate briefly the conditions governing selection and application of suitable burners, it should be remembered that the real question involved is not alone one of burner selection, but, rather, the successful conduct of a heating operation, the results of which should be measured by the quality and overall cost of the heated product.

The article is abstracted from the introduction of Bulletin No. 270, an 8-page copyrighted booklet on oil and gas burners published by the W. S. Rockwell Co., 50 Church street, New York, and is published by permission of that company.

heat generation, and to overlook the fundamental factors governing the efficient application of heat to the product and the utilization of heat within the furnace.

The common-sense principles effecting the design and operation of the ordinary household heater could well be substituted for much of the prevailing inefficient industrial heating practice with advantage to the manufacturer in the form of better and cheaper products, decreased fuel bills and the advantages that accompany improved working conditions for the operatives with modern heating equipment. In either case the problem is really one of the efficient application and utilization of heat with the selection of suitable form of furnace and burner as a means of this end.

Design of Manipulators Is Improved

A new departure in the design of rolling mill manipulators was accomplished during 1925 wherein the desirable features of quick action in operation, accessibility to all parts and a rugged construction were included. The machine is operated electrically and the entire mechanism of the manipulator lies above the floor away from scale and water coming from the mill. The side guard mechanism is entirely enclosed and operate in oil, while the tilting fingers are mounted on a flexible shaft and lift independently of the side guards. The side guards are lifted off without removing bolts, pins etc.

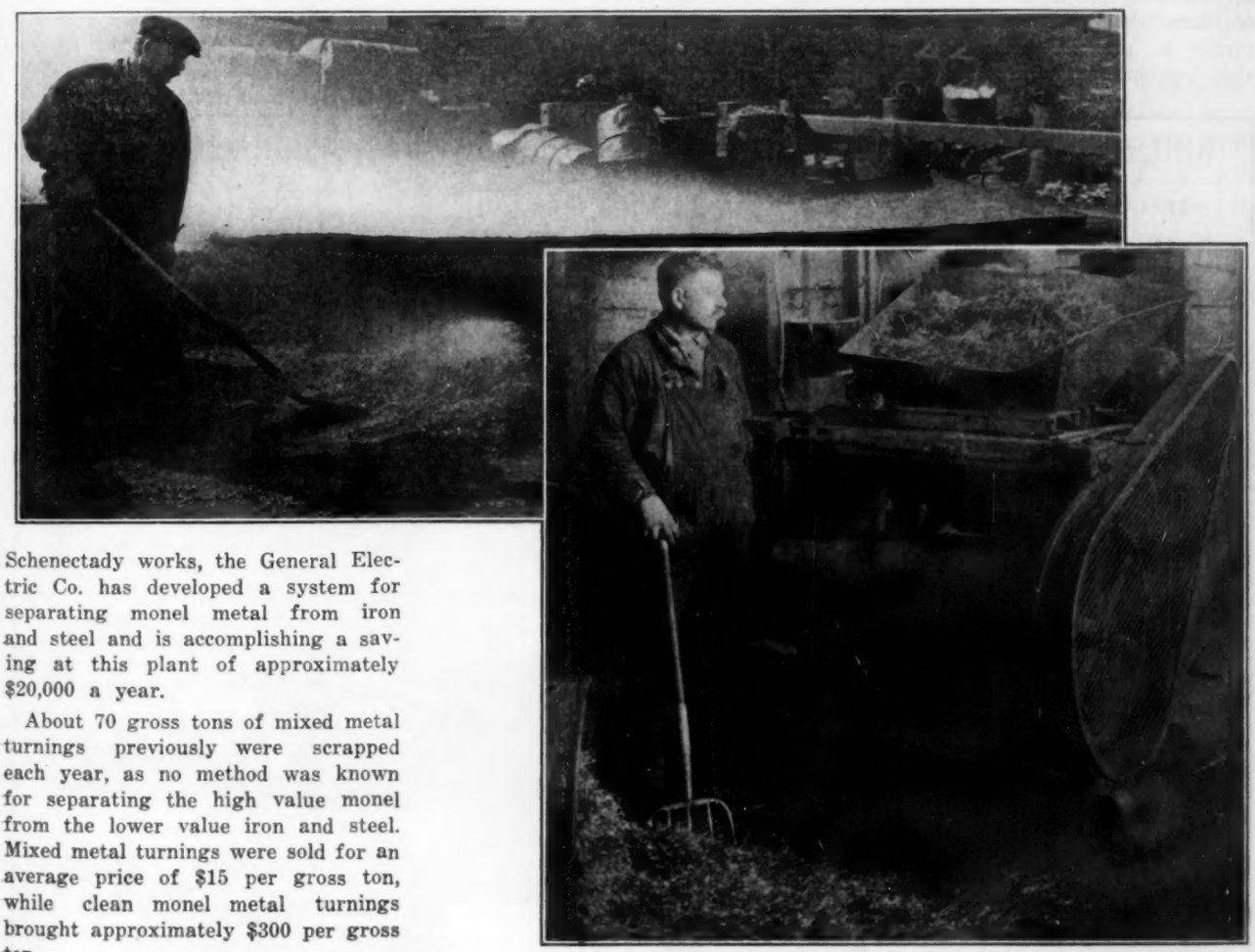
Scrap Metal Separator Effects Large Annual Saving

IN machine shops handling monel metal as well as iron and steel, considerable difficulty sometimes is experienced in preventing turnings from becoming mixed. Monel scrap commands a price about 20 times greater than iron and steel, while mixed scrap brings but little more than the usual prices for ferrous materials. Confronted with the problem of salvaging mixed scrap at its Schenectady works, the General Electric Co. has developed a system for separating monel metal from iron and steel and is accomplishing a saving at this plant of approximately $20,000 a year.

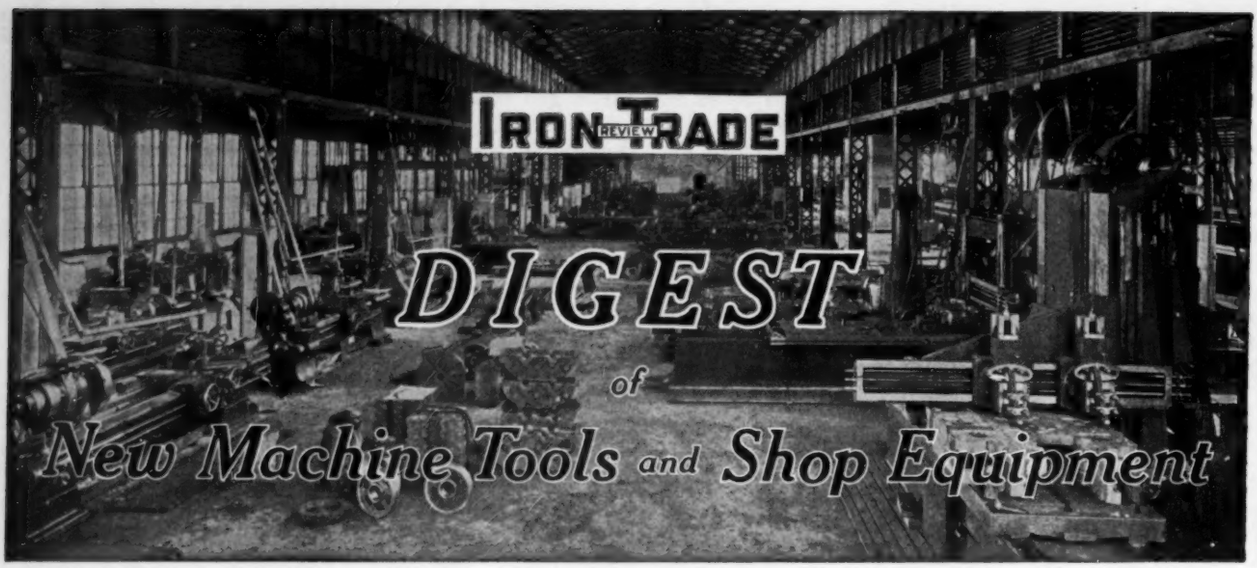
About 70 gross tons of mixed metal turnings previously were scrapped each year, as no method was known for separating the high value monel from the lower value iron and steel. Mixed metal turnings were sold for an average price of $15 per gross ton, while clean monel metal turnings brought approximately $300 per gross ton.

Many methods of separating the two kinds of scrap had been tried without success, including the use of magnets. The magnetic method was not successful because the monel metal was picked up along with the iron and steel. Finally, by using a rheostat on the magnet and reducing the current to a minimum, a point was reached where the iron and steel was picked up and the monel metal dropped. This separating device equipped with a rheostat is shown at the lower right in the accompanying illustration.

During cold weather a clean separation was difficult because of oil congealing on the turnings and holding the two metals together. One of the plant workmen suggested that the turnings be dried on large steel plates with fires beneath, as shown in the cut at the upper left. This method was tried and found to be most satisfactory under all existing conditions.



(UPPER LEFT)—DRYING MIXED FERROUS AND MONEL TURNINGS ON HOT STEEL PLATES. (LOWER RIGHT)—THE MAGNETIC SEPARATOR IN OPERATION



Buyers Center Interest in Shows

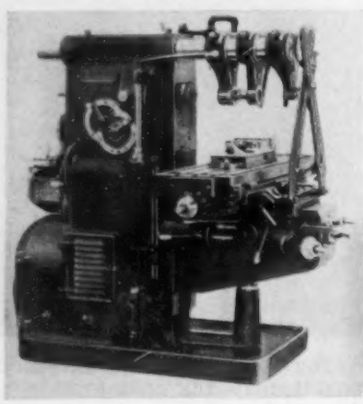
WITH the calendar once more turned to September buyers and users of machine tools are awaiting the three important expositions which will afford an opportunity to observe up-to-the-minute shop equipment in operation. First of all comes the New Haven Machine Tool Exposition which is to be held Sept. 7-10 at Mason laboratory of Yale university, New Haven, Conn. Two weeks later the National Steel and Machine Tool Exposition of the American Society for Steel Treating opens at Municipal Pier, Chicago. It will continue from Sept. 20 to Sept. 24. On Sept. 27, the American Foundrymen's association opens its exposition at the State fair grounds, Detroit. Oct. 1 will be the closing

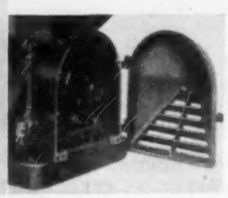
(*Continued on Page* 619)

Miller Has Standard Motor Drive

No. 138

Kearney & Trecker Corp., Milwaukee, is placing on the market a new milling machine, which embodies several innovations in design. Following the trend toward the manufacture of primarily motor-driven machine tools, this miller has been equipped for standard motor drive, but belt drive can be furnished when desired. The motor compartment is totally enclosed in the base of the column and adequate ventilation is provided by louvres in the rear door and side of the column, further aided by a fan on the initial drive shaft. Both the motor and drive are on the inside. The drive is direct through gears and the motor is set with its pinion facing the front of the machine, so as to receive automatic flooded lubrication, as do all other gears and bearings inside the column. To insure quietness of operation, the three fast running initial gears have ground teeth. The double overarm offers increased resistance to deflection, and gives the arbor rigid support.

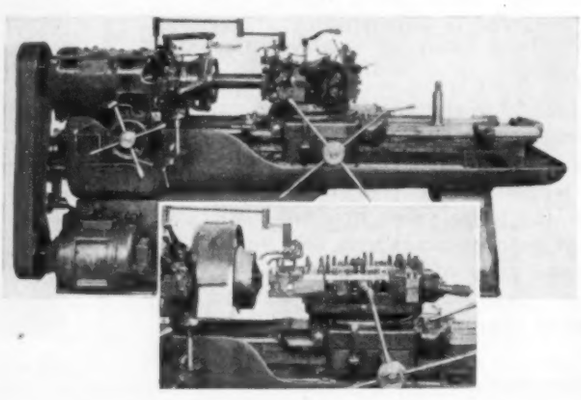




Adds to Turret Lathe Capacity

No. 139

Jones & Lamson Machine Co., Springfield, Vt., announces a new model flat turret lathe of added capacity. This model is equipped both as a bar machine and as a chucking lathe. It will take bar work up to 4 inches in diameter and 34 inches long; as a chucking lathe it is furnished with a 17-inch chuck and has a swing of 21 inches on centers with a swing over the ways of 17½ inches. The headstock has been redesigned to add to the spindle capacity. Spindle is 5¼ inches in diameter with a 4 3/16-inch hole and is mounted in split bronze bearings. Shafts are of heat-treated alloy steel and are mounted in ball bearings. Change speeds, both forward and reverse, are effected through multiple disk clutches. Multiple tooling on large diameter chuck work is facilitated by the large square turret and cross sliding headstock.



Editorials

Record of Steel Treaters Enviable

ALMOST every individual who achieves distinction in his career experiences a thrill when returning to the scene of his early life. Whether it be because of the reminders offered of his first struggle to get on in the world or of the comparison presented of youthful ambition and later accomplishments, the return is likely to heighten the contrast between past and present.

That, in a sense, is the experience awaiting members and guests of the American Society for Steel Treating who attend the eighth annual convention and exposition at Chicago, Sept. 20-24.

The society, or rather one which later was merged to form the present organization, held its first convention in Chicago in 1919. It was largely in the nature of an experiment. The society still was local in character; its membership was small; its finances were in an uncertain state and its policies and functions were not clearly defined or understood, although the need of an organization was apparent.

But from that modest beginning in Chicago, the society has steadily gained in size and strength. Gradually the scope of activities has been enlarged until now it extends far beyond the original conception. Under exceptionally capable management, the membership has been increased to around 4000, finances are on a substantial basis, service to members has been rounded out to fulfill almost every requirement and the machinery for co-ordinating the various activities of the society is operating at a high degree of efficiency.

These accomplishments have elevated the organization to a status of prestige, power and influence not attained by any American technical organization in an equally brief span of years. The American Society for Steel Treating returns to Chicago a full grown association, comparable in every respect to national bodies much older in years and experience. Its officers and members are to be congratulated for having built an institution worthy of the high place it holds in American industrial and scientific life.

Sheet Revision Meets Approval

SHEETMAKERS generally have placed their stamp of approval on the readjustment of black and galvanized sheet differentials made effective Sept. 1 by a large independent producer in the Mahoning valley. Under the new plan the selling price is based on 24 gage for black and galvanized sheets. Under the abandoned schedule 28 gage was the thickness upon which the price was based. New extras and reductions also apply according to the gage differential.

In the case of black sheets, for gages lighter than No. 24, the extra ranges from $2 to $10 a ton while for the heavier gages a reduction ranging from $1 to $9 a ton applies. The extra on galvanized for gages lighter than No. 24 range from $5 to $18 a ton and for the heavier gages from $3 to $16 a ton.

Light-gage sheets cost more to produce than the heavier grades. Hence sellers have been making no special effort to secure such tonnages. In times of dullness many producers combed the market for specifications in the heavier thicknesses, often at the expense of prices. With the profitable gages out of the market the less desirable business was left for latecomers.

The adoption of the new base gage arrangement should eliminate this practice to a large extent by making all gages desirable from the tonnage and price standpoint. They will place both large and small makers of sheets on an even footing in their endeavor to balance hot mill schedules.

Another effect of changing the gage differentials is that the plan will be more favorable to the hot mill crews. Under the agreement between mill owners and the Amalgamated Association of Iron, Sheet and Tin Workers the wages of the crew are based on the actual average invoiced selling price of 26, 27 and 28 gage black sheets. Lowering the base gage to No. 24 permits of a slightly advanced rate of wages in the hot mill which doubtless will tend to allay some of the dissatisfaction over mill scales recently expressed by the men.

Coke Outlook Is Complicated

COMPLICATIONS in the Connellsville coke market are becoming more impressive. Producers are looking for a stronger market. Until the British coal strike is settled an increasing volume of American coal will go abroad, they believe, and while British purchases have been distributed skilfully and much fuel has been bought in other countries, they are nevertheless edging into the coking coal regions and affecting

prices. Producers see the striking miners returning in small groups, thereby insuring a gradual subsidence in demand for American coal.

The approach of winter must be accounted a factor for strength. Presumably coke made some lasting friends when it stepped into the breach in the course of last winter's anthracite strike. Some large industrial consumers of coal apparently are contemplating stocking against a possible cessation in the bituminous field next spring when the Jacksonville wage pact expires.

On the other hand, the rising tendency in coke, which has been in evidence for some weeks, has lost some impetus with the crossing of the $3 mark. The merchant furnaces contend they cannot pay over $3, with foundry iron at its present level. Coke users view the termination of the British coal strike in a different light from producers; they believe the search for a home market for over 500,000 tons of export coal weekly is bound to hold down coke.

What will happen in spring, when the Jacksonville agreement expires, is difficult to forecast but majority opinion is that the miners will be compelled to strike to maintain their position. One steelworks interest is understood to have contemplated laying down considerable coking coal, but with prices up on account of export demand it is shopping for coke instead. Another interest is credited with watching the domestic coke market to ascertain whether it can sell its by-product coke for home consumption and replace it with cheaper beehive coke.

It seems assured that Connellsville coke will provide an interesting market over the next few months.

"For the Economic Good"

UNUSUAL tranquility of American labor relations is one indication that they never were more satisfactory than they are today. An extremely few instances of discord only serve to direct attention to the generally favorable state of affairs. The building trades, chronically the hot-bed of strife, now present a remarkable picture of peace; except in San Francisco where unions are making a bitter struggle for a closed shop, and minor disputes in Philadelphia and Kansas City, building operations are practically free from disturbance. In no other industry is there serious or widespread difficulty.

The reason is labor is sharing to the fullest extent in prosperity. A great deal was written the other day about the General Motors cutting a "melon;" when a large electric company at the same time cut a "melon" for its employes, and paid them $1,500,000 extra for the first six months of 1926 it scarcely attracted notice. One commentator remarked that "labor is getting its share."

Labor is recognizing economic truths more than it ever did before; it understands how much its income depends on its efforts for the good of all; there is less class consciousness, when labor gets its share.

Some months ago the building trades unions in Cleveland stepped out of line and tried to enforce absurd wage demands; capital could not be induced to aid building operations, and the unions lost. The painters were more belligerent; they refused to go back for $1.25 per hour. All painting and decorating stopped. They were out six months, until the other day they gave up; their leaders said, "for the economic good of our city."

These show the drift; labor is learning to use and to understand the phrase "For the economic good of our city;" not a very difficult lesson in these days.

What Our Readers Are Thinking

Safety Work Brings Results

IN CONSIDERING the accident situation in Pennsylvania, it is necessary to keep in mind that we are the greatest industrial commonwealth in the United States; we lead in practically every industry which is likely to be productive of accidents. It is good to know that whereas in 1921 we had 65 per cent more fatal accidents than the next state, which is New York, in 1925 we had only 18 per cent more fatal accidents than the next state. It is also good to know that we stand third, not first, in the total number of accidents.

Some states do not include all accidents in their reports. Most states do not include the interstate commerce accidents because the compensation laws of the various states do not cover interstate commerce accidents, but in Pennsylvania we have an accident reporting law, which requires every accident, causing absence from work more than 48 hours, to be reported.

The fact that the month of April, 1926, showed a lower number of fatal accidents reported than we had in any preceding month for the last five years, when the coal mines of the state were working, and the fact that this year to date we have had about 60 less fatal accidents and about 6000 less nonfatal accidents than we had for the first four months of 1925 indicates that this progress is still being maintained.

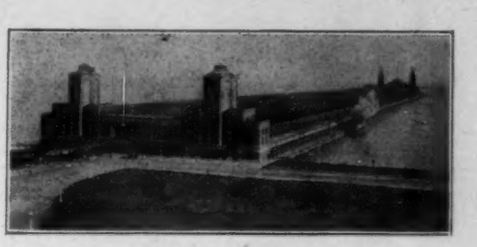
This is mainly due to the increasing and sustained basic efforts of our industry and of our individual workers. In many of our great industries, particularly iron and steel, safety has come to be a most important element in daily plant operation. There is not a plant in the state of Pennsylvania with which I come in contact where, in the last analysis, safety is not placed before production.—RICHARD H. LANSBURGH, *Secretary, Pennsylvania department of labor and industry, in address at the state-wide safety conference.*

The Reader's Page

Vol. LXXIX, No. 10 IRON TRADE REVIEW Sept. 2, 1926

A Big "Special" for a Great Industrial Convention

PHENOMENAL growth of the American Society for Steel Treating, indicating the importance of this branch of industry, is shown in the arrangements for its annual convention and exhibition in Chicago, Sept. 20-24. When the society held its convention in that city in 1919, fifty manufacturers were represented, the exhibition space was 6500 square feet, and the number in attendance totaled 6000. The "home coming" will be memorable, with seven times as many exhibitors as before, 12 times as much floor space, and probably more than eight times as many visitors. A record such as this is something of which to be proud, and in recognition of the society's achievements, IRON TRADE REVIEW devotes 18 editorial pages in this issue to description, illustrations, programs, names and other features of the convention and exhibition. Read, and attend!



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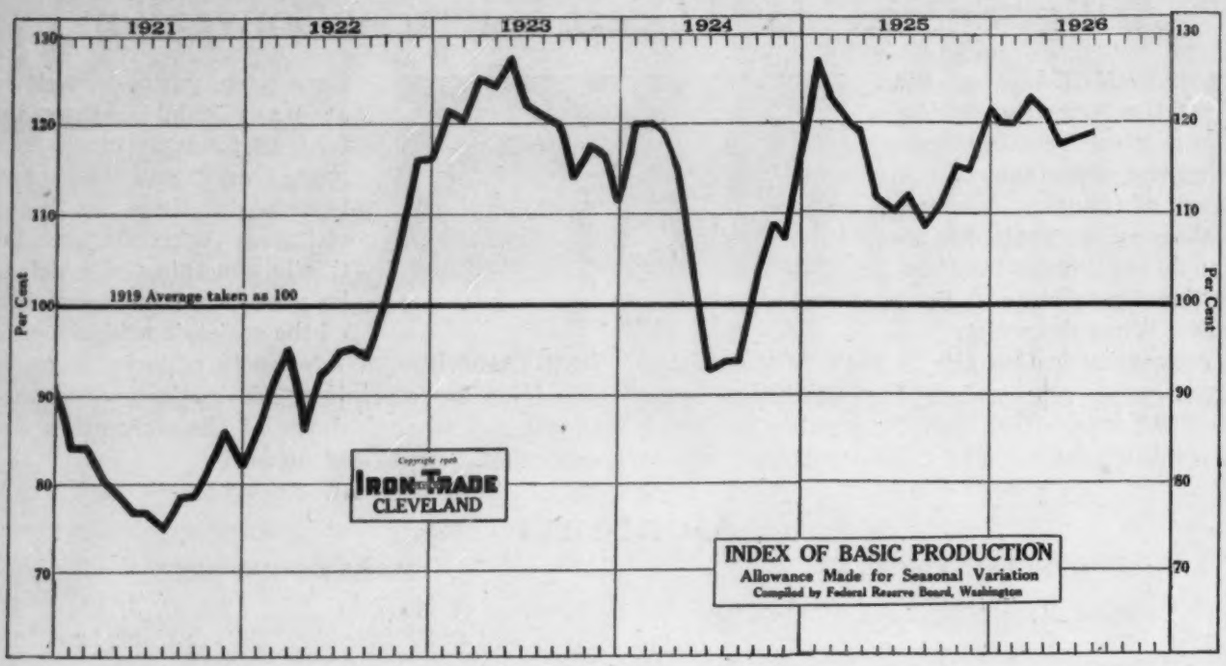
The Business Trend



Productive Efficiency Is High

By JOHN W. HILL, Financial Editor

THE steadiness of industry during the current summer is graphically pictured by the index of production in basic industries of the Federal Reserve board. The curve of this index was at its highest point in March when it reached 123. It dropped to 117 in May. In June it rose to 118, and, again, in July it increased to 119. In July 1925 the index stood at 113.

THOUGH there were some declines in the output of iron and steel and a few other industries, the production of zinc, cement and petroleum increased. The manufacture of automobiles was lower and this was largely due to the seasonal shutdowns for changes to new models.

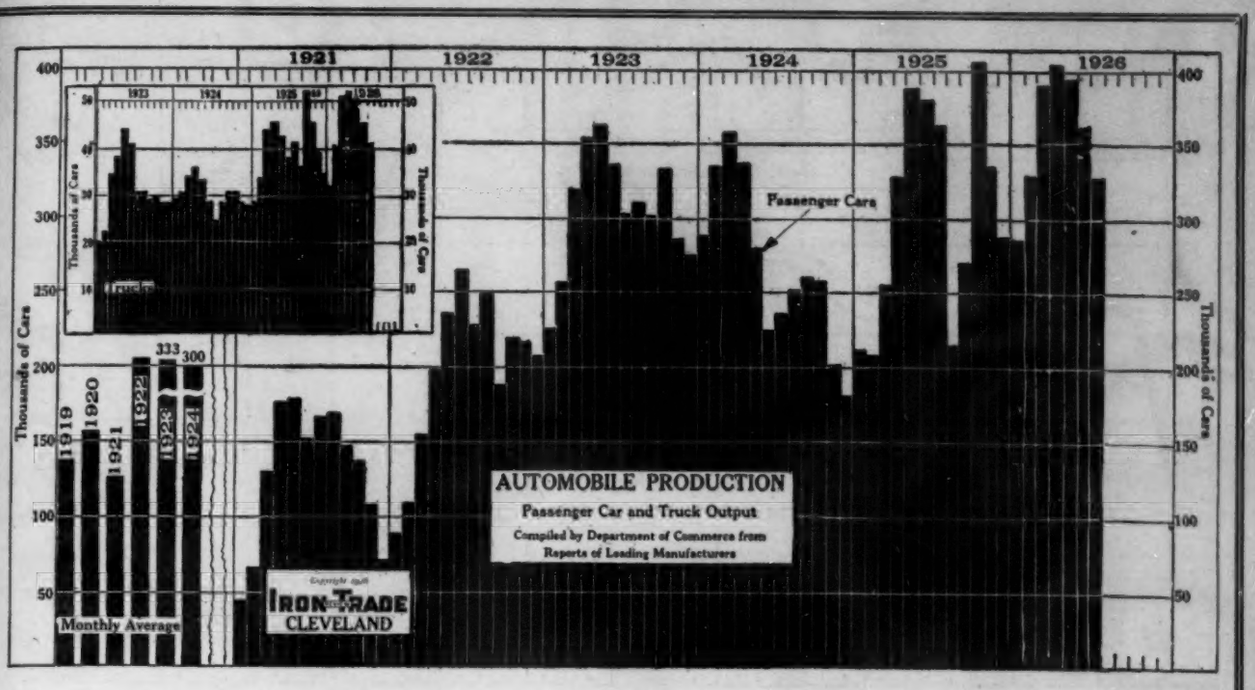
ONE of the important indications of the season has been the continued high level of employment. During July there was a small decline in employment in industrial establishments due to normal seasonal conditions. But compared with one year ago employment continues on a higher scale.

THIS is particularly true in the iron and steel industry. In July this year the index of employment in iron and steel stood at 91 per cent of the 1919 average compared with 85 per cent in July, 1925. Although employment is running only about 7 per cent greater than it was in 1925, production of iron and steel is about 20 per cent greater than it was 12 months ago.

HERE is striking evidence of increased productivity which has been one of the phenomenonal developments of recent years. Even more impressive is the fact that employment is about 10 per cent less than it was in 1919, yet production this summer is running 24 per cent ahead of what it was in the summer of 1919.

THE high level of activities in iron and steel and in many other industries of recent months has added deeper interest to the immediate outlook. The traditional uncertainty at the end of August is at hand. So far no important evidences of coming decline have appeared. On the contrary basic conditions have an aspect of soundness that is reassuring.

The Business Trend

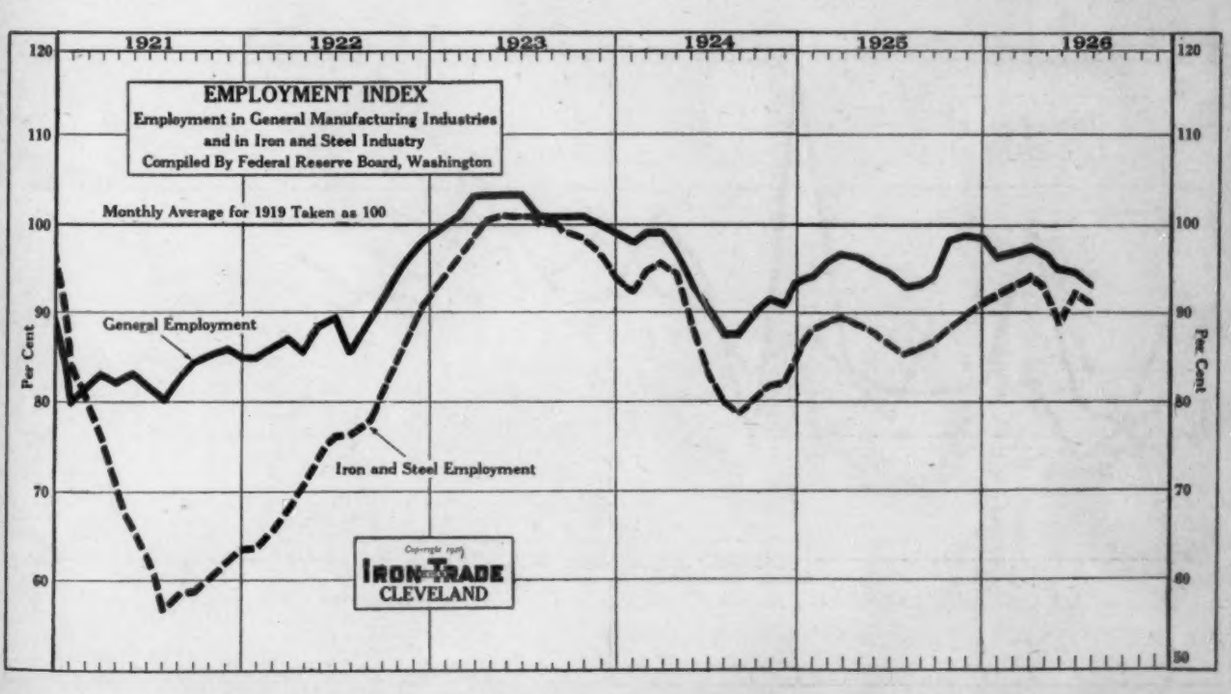


Automobile Output

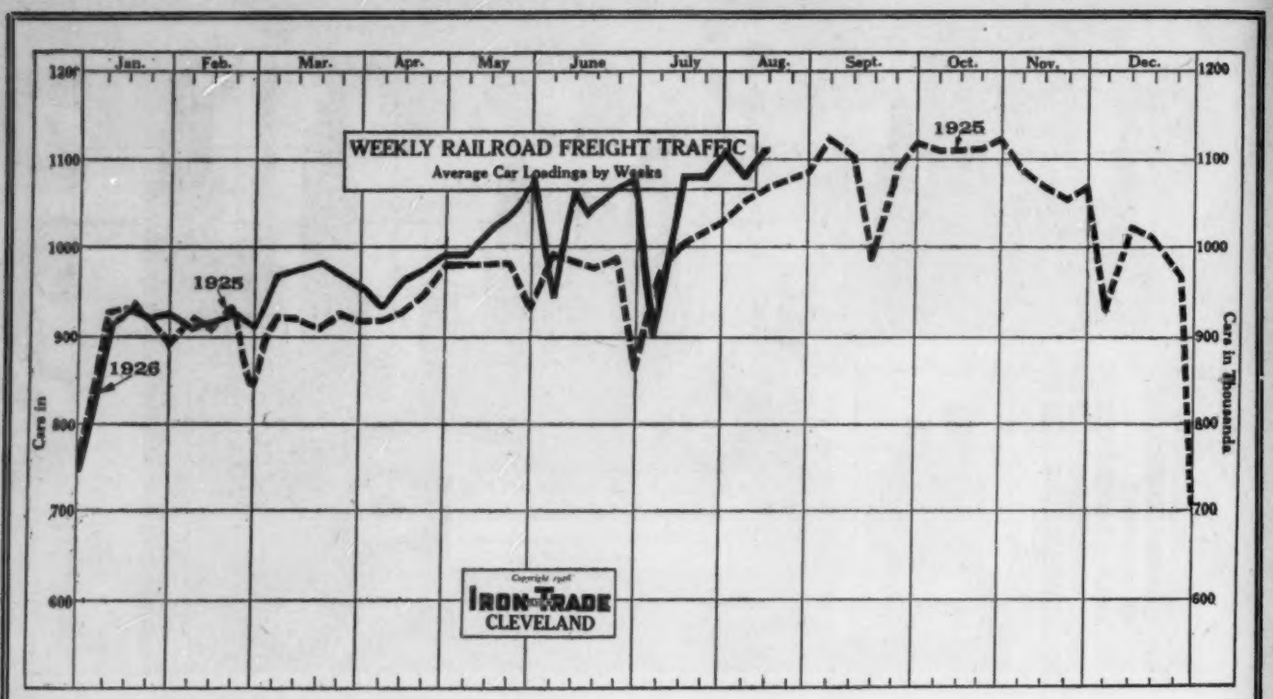
THE output of passenger cars and trucks in July declined slightly from June, and the total was the lowest for any month since January. During the month production of passenger cars in the United States was 315,861 compared with 355,446 in June and 340,000 in July, 1925. The number of trucks produced was 39,585 compared with 44,110 in June. The output of cars and trucks for the first seven months of 1926 of 2.680,317 exceeded all other records for a corresponding period.

Employment Index

JULY brought some seasonal recession in industrial employment according to the federal reserve board's index. Total employment reported by the board for industry throughout the country stood at 93.5 per cent of the 1919 average. This index was 95 per cent one month before and 93 per cent in July 1925. Employment in iron and steel mills stood at 91 per cent of the 1919 average in July, compared with 92.5 per cent in June. The rate of employment in July this year was substantially above that of 1925.



The Business Trend

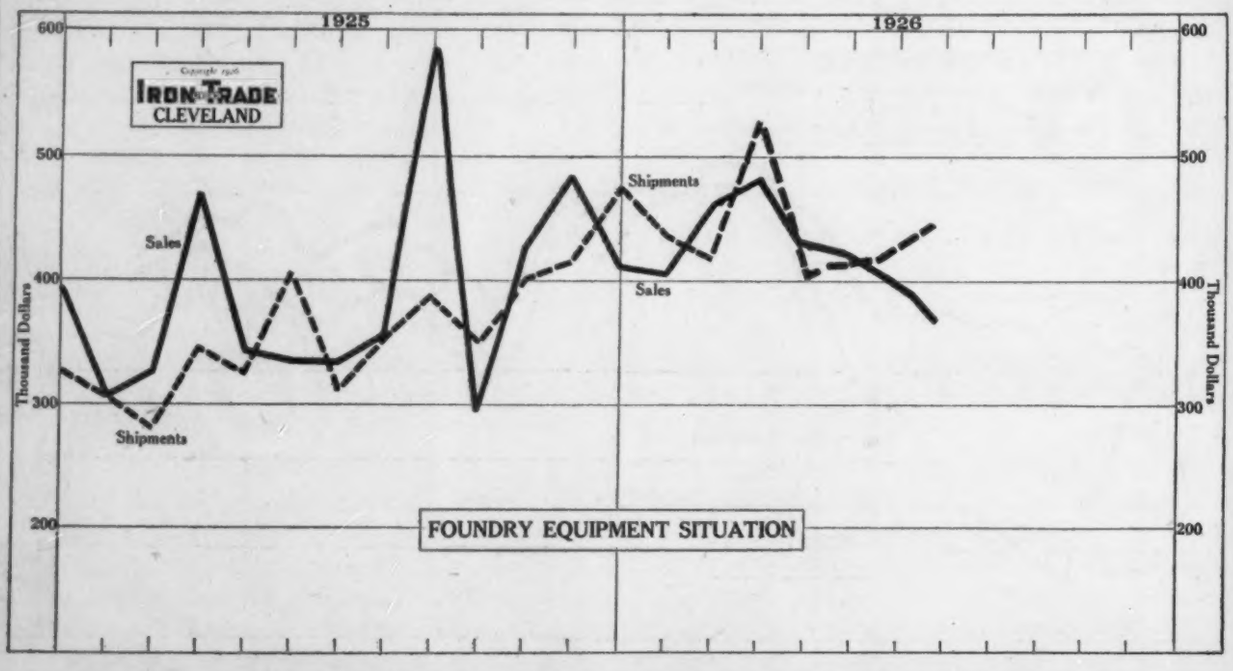


Railroad Traffic

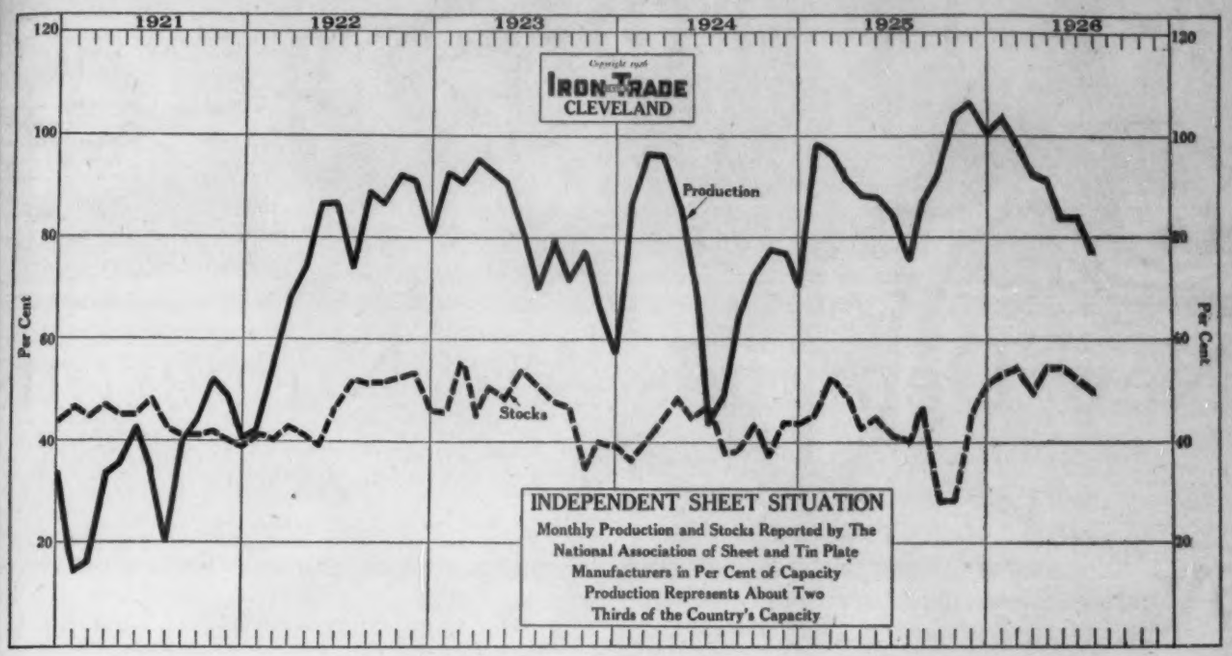
MOVEMENT of revenue freight continues to range at levels never before equaled at this time of the year. For the week ended Aug. 14, car loadings numbered 1,109,557 compared with 1,083,199 in the preceding week and 1,064,000 one year ago. This was the eleventh week of 1926 in which loadings have totaled over 1,000,000 cars and it was the highest total for any week this year. Since the first of 1926 aggregate freight movements show an increase of 3.4 per cent over those of the same period of 1925.

Foundry Equipment

FOUNDRY equipment business reflected in sales, shipments and unfilled orders receded somewhat during July, according to reports of 14 makers to the Foundry Equipment Manufacturers' association. July sales amounted to $378,163 a decline of 7 per cent from June and 6 per cent below July 1925. Shipments were valued at $448,390 and they were 7 per cent below June and 20 per cent below July 1925. Unfilled orders as of Aug. 1, amounted to $441,119, a decline of 19 per cent from those of one month before.



The Business Trend

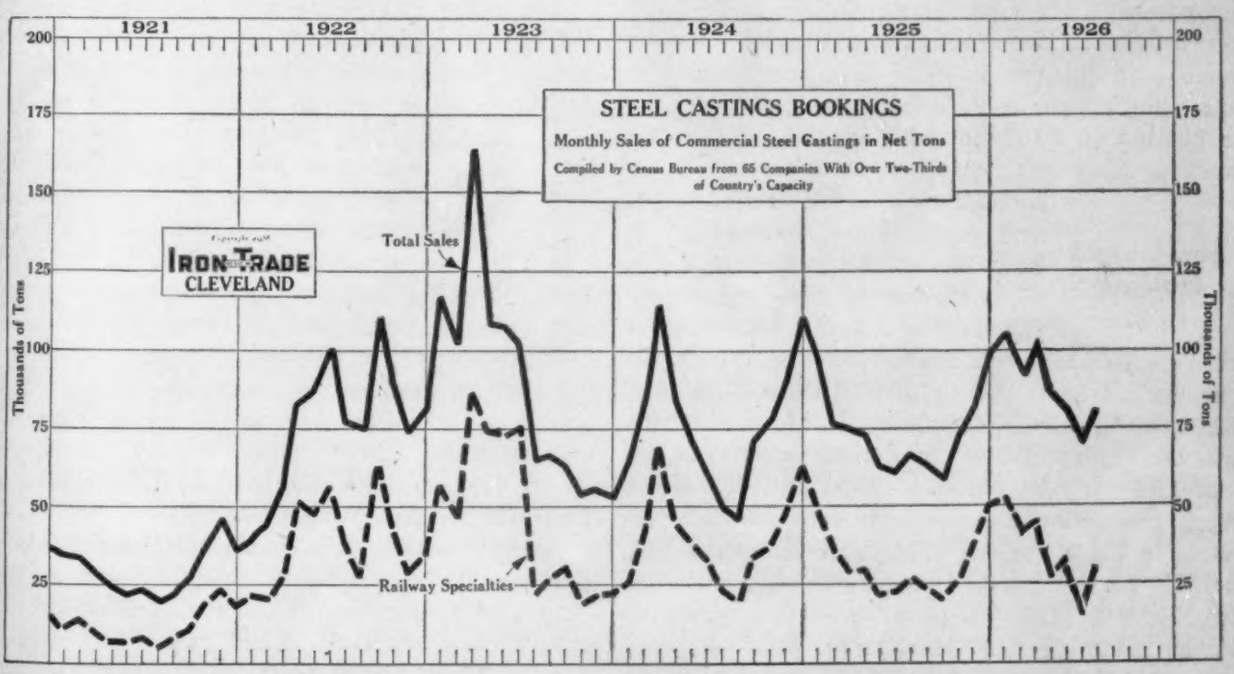


Independent Sheets

SHIPMENTS and sales of sheets reported by the National Association of Sheet and Tin Plate Manufacturers for July tell a story of improvement in that industry. During the month sales of sheets rose to 113.6 per cent of capacity of mills compared with 89 per cent in June. Production fell off slightly to 77 per cent of capacity, compared with 84 per cent in June. Unfilled tonnage increased to 168 per cent compared with 132 per cent in June. Stocks on hand dropped to 49 per cent from 55 one month before.

Steel Castings Bookings

SUBSTANTIAL expansion in bookings of steel castings is shown in the report for July. Bookings totaled 82,628 tons and they were the heaviest since April according to returns to the department of commerce from 108 companies. Bookings in July were 64 per cent of capacity compared with 53 per cent in June and 54 per cent in July 1925. The gain was due to enlarged railroad buying, this total rising to 29,258 tons compared with 16,000 tons in June. Miscellaneous bookings totaled 53,000 tons.



New Demands Are Numerous

Run-of-Market Tonnage Continues of Large Proportions—Forward Buying Still Very Limited—Week's Structural Awards Reach Highest Total of Year—August Pig Iron Production Holds Its Own

ALL the tests of production, shipments and incoming orders fix the fact that consumption of steel is moving ahead steadily on about the same basis that has made the recent season unique in the volume and stability of demand. If recent buying has been robbing the market of future possibilities, there are no truthworthy indications to show it. With some exceptions, buyers are placing orders only as they feel the immediate need and are keeping stocks to the lightest proportion. This makes for a large number of individual sales. A few of the larger consumers in western territory have been contracting against expected needs for several months ahead. While producers are accepting orders for the fourth quarter at present prices, it is only the relatively few who are taking advantage of this.

Operations are virtually unchanged at 80 to 85 per cent with the Youngstown district showing some gain this week. The Steel corporation is exceeding 85 per cent. The Bethlehem Steel Co. is putting in two additional blast furnaces this week at Sparrows Point and at Johnstown.

Iron Output Holding

Indications that the decline in pig iron production which started in May, has about run its course are to be found in the preliminary figures for August. Output for that period based on estimates telegraphed by various furnaces was 3,188,579 tons against 3,224,663 in July, a decline of 1.1 per cent. This was the highest August production since 1923 and was 17.8 per cent ahead of August, 1925. Since April production has fallen 10.2 per cent. Furnaces in blast the end of August numbered 215, or 57.8 per cent of the country's total, a loss of two. However, this will be offset by two additional stacks resuming this week.

August brought forth the greatest August shipments of Lake Superior iron ore on record, something like 10,500,000 tons, and, with the exception of July, 1918, the largest total for any month in history.

Awards Are Heaviest

Swollen by the 29,100 tons for two Staten Island bridges, structural steel awards for the week were the largest of the year and had not been equaled in two years. The total was 68,535 tons. The Municipal Courts building, St. Louis, added 9000 tons to the list. Pending tonnage makes a promising outlook and is very heavy. Chicago presents one of the most active centers with 40,000 tons under bid.

One of the large pipe line projects which have been before the mills recently has been placed, the Prairie Pipe Line Co. closing at Pittsburgh on 207 miles of 8-inch or 15,500 tons.

The scrap market shows further buoyancy. Eastern works have been heavier buyers of heavy melting steel and cast scrap, the former at $17.50 delivered, an advance of 50 cents.

Sheet Bases Changed

Most of the sheet mills have adopted the 24 gage base with accompanying revised differentials, announced by the Youngstown Sheet & Tube Co., effective Sept. 1. This includes the American Sheet & Tin Plate Co. and leading independents. Some mills, however, have reserved action. The new schedule is designed to more closely harmonize prices on both light and heavy gages with production costs. These changes involve advances of $1 to $3 per ton on lighter and reductions on $1 to $7 per ton on heavier gages.

Another action, independent of the revision of differentials is an advance by practically all producers of $2 per ton in full finished sheets.

A languid condition of pig iron prices persists despite heavy shipments. On business the past

week quotations of $17.50, valley on foundry iron were freely made, bringing out retaliation from other makers. Eastern sales of 15,000 to 20,000 tons of basic were done 25 cents lower.

July iron and steel exports reached the highest total since January, 1924, or 194,717 tons. Imports fell to 82,411 tons, the smallest since January.

An English maker has taken 21,000 tons of pipe for Brazil which will be made of special analysis iron under American license.

After holding constant for five consecutive weeks, IRON TRADE REVIEW composite of fourteen leading iron and steel products has dipped slightly to $37.58. Last week it was $37.61.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Sept. 1, 1926	Aug. 1926	June 1926	Sept. 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$19.76	19.76	20.76	21.01
Basic, valley	17.50	17.50	17.75	18.25
Basic, eastern del., eastern Pa.	20.75	21.00	21.75	20.50
*No. 2 foundry, del., Pittsburgh	19.26	19.26	19.76	20.51
No. 2 foundry, Chicago	21.00	21.00	21.10	21.10
*Southern, No. 2, Birmingham	21.00	21.00	21.00	18.50
*Southern Ohio, No. 2 Ironton	20.00	19.90	19.50	19.50
**No. 2X, Virginia furnace	23.00	22.75	23.00	23.00
**No. 2X, eastern del., Phila.	22.26	22.01	22.76	21.86
Malleable, valley	17.50	17.50	18.00	18.75
Malleable, Chicago	21.00	21.00	21.10	21.10
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del., Pittsburgh	19.01	19.01	19.26	19.86
Ferromanganese, del., Pittsburgh	92.79	92.79	92.79	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	3.00	2.85	2.70	3.45
Connellsville, foundry, ovens	3.75	3.60	3.75	4.20
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.00	36.00	34.25
Sheet bars, open-hearth, Pittsburgh	36.00	36.00	36.00	35.00
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	35.00
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	1.90	1.95
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.27	2.27	2.22	2.27
Iron bars, Philadelphia	2.27	2.27	2.22	2.12
Iron bars, Chicago, mill	2.00	2.00	2.00	1.90
Beams, Pittsburgh	2.00	2.00	1.90	1.90
Beams, Philadelphia	2.32	2.32	2.22	2.17
Beams, Chicago	2.10	2.10	2.10	2.10
Tank plates, Pittsburgh	1.90	1.90	1.90	1.80
Tank plates, Philadelphia	2.22	2.22	2.22	2.07
Tank plates, Chicago	2.10	2.10	2.10	2.10
Sheets, black, No. 28, Pittsburgh	3.10	3.10	3.10	3.15
Sheets, blue anl., No. 10, Pittsburgh	2.30	2.30	2.35	2.30
Sheets, galvanized, No. 28, Pittsburgh	4.25	4.30	4.30	4.20
Sheets, black, No. 28, Chicago	3.25	3.25	3.35	3.35
Sheets, blue anl. No. 10, Chicago	2.45	2.45	2.55	2.45
Sheets, galvanized, No. 28, Chicago	4.45	4.45	4.55	4.45
Wire nails, Pittsburgh	2.65	2.65	2.65	2.65
Wire nails, Chicago	2.70	2.70	2.70	2.70
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	18.00	17.75	15.85	19.00
Heavy melting steel, eastern Pa.	17.25	16.75	15.25	17.25
Heavy melting steel, Chicago	14.00	14.00	12.65	16.45
No. 1 wrought, eastern Pa.	17.00	17.25	17.00	18.25
No. 1 wrought, Chicago	14.85	14.75	12.65	17.05
Rails for rolling, Chicago	17.25	17.25	15.10	19.00

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Sept. 1, 1926)	$37.58
Last week (Aug. 25, 1926)	37.61
One month ago (August, 1926)	37.61
Three months ago (June, 1926)	37.69
One year ago (September, 1925)	37.35
Ten years ago (September, 1916)	39.97
Thirteen years ago (September, 1913)	25.55

Late News Flashes

Chicago Holds Its Rate

Chicago, Aug. 31.—Output of steel ingots continues at a rate of slightly less than 85 per cent. Sheet mills are operating practically at capacity. Active steelworks furnaces in the district number 26.

Bethlehem Puts in Furnaces

New York, Aug. 31.—Two additional blast furnaces are being put in by the Bethlehem Steel Co. this week. One at Sparrows Point resumes Wednesday and the other at Johnstown is scheduled to start Sept. 4.

Operations of the Steel corporation at present are above 85 per cent of steel ingot capacity.

Pittsburgh Maintains Its Gait

Pittsburgh, Aug. 31.—Pittsburgh district mills evidence practically no change from the 85 per cent gait which has been maintained the past month. Some loss has been registered in plate and shape production but it has not been marked.

The Jones & Laughlin Steel Corp. will begin loading barges in September for southern delivery via the rivers.

Valley Steelworks at 85 Per Cent

Youngstown, Aug. 31.—Independent steelworks in this district are operating at slightly better than 85 per cent. One more sheet mill is active than last week, making 115 running, out of 127. Mills producing heavier steel lines such as bars, plates, and tubes are around 88 per cent active, with tin plate and strip mills 100 per cent active. Steel corporation mills in the district are around 90 per cent active, with sheet and tin mill output practically at capacity.

New Differentials Meet With Criticism

Pittsburgh, Aug. 31.—An informal meeting of independent sheetmakers was held here today to discuss the new differentials. Considerable criticism was expressed, chiefly because heavy as well as light gages were not advanced. It is felt the new basis is much more favorable to self-contained sheetmakers than to those buying sheet bars. No action was taken but the general belief is that adherence by leading makers to the new basis will force all into line.

A West Virginia sheetmaker is understood to have adopted new differentials, naming 3.10c, base, on black, and 3.90c, base, on galvanized, $2 a ton more on black and $1 a ton more on galvanized than the base prices of those who adopted the Youngstown schedule.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	44.30 to 45.30

SHEET BARS

Pittsburgh	$36.00
Youngstown	36.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

Pittsburgh	44.00 to 45.00
Cleveland	45.00
Chicago	46.00

Standard extras, $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	2.00c to 2.10c
Philadelphia	2.32c
New York	2.34c
Chicago	2.10c
Cleveland	2.19c
Birmingham	2.15c to 2.25c

Steel Plates

Pittsburgh	1.90c
Philadelphia	2.22c
New York	2.24c
Chicago	2.10c
Cleveland	2.09c
Birmingham	2.05c to 2.15c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c to 2.10c
Pittsburgh, cold finishing	2.15c
Pittsburgh, forging quality	2.15c
Philadelphia, soft steel	2.22c to 2.32c
New York, soft steel	2.24c to 2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c to 2.10c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c
Mill rail steel	1.85c to 1.95c
Philadelphia, common iron	2.22c to 2.32c
New York, common iron	2.24c to 2.34c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh, stamping quality, over 6 in.	2.30c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1¼ inches and wider by 0.100-inch and heavier, base, Pittsburgh	3.50c to 3.60c
Worcester, Mass.	3.90c
Chicago	3.90c to 4.05c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel)	4.40c to 4.50c
3100 (Nickel chromium)	3.40c to 3.50c
6100 (Chrome vanadium)	4.25c to 4.30c
6100 (Chrome vanad. spring)	3.85c
9250 (Silico-mang. spring)	3.25c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	23.00 to 25.00
Light rails, 25 to 45 mills	33.00 to 34.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.90c
Spikes, small railroad, 7-16-inch and smaller, Pitts.	2.90c
Spikes, boat and barge, Pitts.	3.10c
Spikes, railroad, Chicago	2.90c
Track bolts, Pitts. standard	3.90c to 4.25c
Track bolts, Chicago	3.90c
Tie plates, Chicago	2.35c
Tie plates, Pittsburgh	2.25c to 2.35c

Wire Products

To Jobbers in Carloads

Dealers 5 cents per 100 pounds extra

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 pound kegs, subject to card of extras Feb. 1, 1926 over regular wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts. $20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there: Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh, base	3.10c to 3.25c
No. 28, Philadelphia, delivered	3.42c to 3.47c
No. 28, Gary, Indiana Harbor	3.35c
No. 28, Chicago, delivered	3.40c

TIN MILL, BLACK

No. 28, Pittsburgh	3.10c to 3.15c
No. 28, Gary base	3.25c

GALVANIZED

No. 28, Pittsburgh, base	4.25c to 4.35c
No. 28, Philadelphia, delivered	4.52c
No. 28, Gary, Indiana Harbor	4.45c
No. 28, Chicago, delivered	4.50c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.30c
No. 10, Philadelphia, delivered	2.62c to 2.72c
No. 10, Gary, Indiana Harbor	2.40c
No. 10, Chicago, delivered	2.45c

AUTOMOBILE SHEETS

No. 22, Pittsburgh, base	4.30c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, base	4.65

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 2¼ to 3¾-inch	68½
Charcoal iron, 2¼ to 4½-inch	5
Seamless hot rolled, 2¼ to 3¼-inch	46 off

Additional discounts of seven 5 per cents being allowed for carloads and six 5 per cents for less-carload, on Japanned steel. On seamless hot rolled several additional 5 per cents are allowed.

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l. f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$51.20 to 52.20
Six-inch to 24-inch, Chicago	48.20 to 50.20
Over 24-inch, Chicago	45.20
Four-inch, Birmingham	44.00 to 45.00
Six-inch and over, Birmingh'm	40.00 to 41.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list

Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger 75, 10 and 5 off

Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller 80, 10 and 5 off

Cold finished S. A. E. semifinished ⅝-inch and larger 75, 10, 10 and 5 off

Cold finished S. A. E. semifinished 9/16-inch and smaller 80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅜ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off

Rough stud bolts with nuts (250 pieces or more of a size) 40 and 10 off

Stove bolts, 80 and 10 off plus 2½ off in bulk to 80, 10 and 5 off plus 2½ off in bulk.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.80
¾	28.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	151.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	2.60c to 2.75c

**Rivets, 7/16-inch and smaller, Pittsburgh, Cleveland, 70, 10 and 5 to 70 and 10 off.

**Rivets, 7/16-inch and smaller Chicago 70, 10 and 5 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.40 to 6.50 off
Wrought c.l., Pitts dist	6.50 to 6.55 off
Lock washers, f.o.b. factory	85 to 90 off

Pig Iron

Market Is Quiet, While Shipments Continue Heavy—Competition Keen for Fourth Quarter Business

WHILE pig iron shipments continue on a generally satisfactory basis, new business is of very small proportions, and the market for fourth quarter in some districts is slightly easier. The Westinghouse Electric & Mfg. Co. and the Pittsburgh Valve, Foundry & Construction Co. have been holding up their orders for 2000 tons each, although prices as low as $17.50, base, valley, were submitted from several sources. It is understood some melters are asking makers to waive their silicon differentials. Valley furnaces have taken orders in western Ohio territory at $17.50, base, furnace, compelling lake furnaces to go to $18 to $19 to check further inroads. Valley sales at $18 are restricted to small filling-in lots.

PITTSBURGH, Aug. 31.—The pig iron market continues inactive, and no change is expected until after Labor day. Neither the Westinghouse Electric & Mfg. Co., nor the Pittsburgh Valve, Foundry & Construction Co. has closed on its recent inquiry for 2000 tons, each, but they are considering quotations down to $17.50, base, valley. It is understood efforts of some melters to obtain waivers on silicon differentials have been unsuccessful. The Duquesne Steel Foundry Co. placed 1000 tons of bessemer with an eastern Pennsylvania furnace. Follansbee Bros. Co. placed 1000 to 3000 tons of basic with a furnace enjoying a lower freight than valley makers. Some furnaces continue to quote a minimum of $18, obtaining small filling-in lots at that price. Certain Mahoning valley furnaces are reported to be piling iron rather heavily. One Shenango valley furnace is drawing on its stockpile. The market on No. 2 plain is unchanged at $17.50 to $18, valley.

Boston, Aug. 31.—While little change in pig iron buying in New England has been noted during the past week, foundries generally are in a more receptive mood. A Connecticut foundry recently bought 1000 tons at the equivalent of $18, Buffalo, or $22.91, delivered, and this is about the delivered price for iron from other New York state furnaces. Eastern Pennsylvania furnaces have backlogs, and prices from that source are decidedly firmer. Continental iron has advanced and is now quotable at $19.50 to $20.50 f.o.b. Boston. First quarter inquiry is spreading. Furnaces, however, are reluctant to contract beyond Jan. 1.

New York, Aug. 31.—Pig iron buying here is quiet. The total bought in this district during the past week probably did not exceed 5000 tons. Eastern Pennsylvania foundry iron continues to be quoted at $21, base furnace. Buffalo foundry generally is $19, base furnace. German iron is less a factor and is quoted at $20.50 to $21, duty paid tidewater. Dutch foundry, high in silicon, is bringing $21.25 to $21.50 duty paid tidewater. Very little Indian iron is being offered here at this time. Otherwise foreign iron is not a factor at the present time.

Buffalo, Aug. 31.—Pig iron is feeling a steadying influence in the nearby consuming territory, but is subject to other factors outside. Heavy consumption of iron by local steelmakers has reduced their availale offerings of merchant iron to small proportions. One probably is out of the market for this year entirely, and another is not anxious to sell. The Buffalo district price is $20 for low silicon foundry and malleable. Outside, Buffalo makers must shade $20 considerably to get any of the larger lots. Inquiry runs around 3000 tons, with weekly sales two or three times this total. Fourteen furnaces are in operation.

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$18.00 to 19.00
Bessemer, Pittsburgh	19.76 to 20.76
Basic, valley	17.50 to 18.00
Basic, Pittsburgh	19.26 to 19.76
Basic, Buffalo	19.00 to 19.50
Basic, del., eastern Pa.	21.00 to 21.25
Malleable, valley	17.50 to 18.50
Malleable, Pittsburgh	19.26 to 20.26
Malleable, del., Cleveland	19.50
Malleable, Chicago	21.00
Malleable, Buffalo	19.00 to 20.00
Malleable, del., eastern Pa.	21.75 to 22.25
No. IX, Eastern del., Phila.	22.26 to 22.76
No. IX, Buffalo	20.50 to 21.00
No. 1 foundry, Chicago	21.50
No. 2 foundry, valley	17.50 to 18.50
No. 2 foundry, Pittsburgh	19.26 to 20.26
No. 2 foundry, Buffalo	19.00 to 20.00
No. 2 foundry, Chicago	21.00
No. 2 foundry, Granite City	22.00 to 22.50
No. 2 foundry, Ironton furnace	20.00
No. 2 foundry, del., Cleveland	19.50
No. 2 foundry, del., Phila.	21.76
No. 2 foundry, N. J., tidewater	22.39
No. 2X, eastern del., Phila.	22.26
No. 2X, east N. J., tidewater	22.89
No. 2X, foundry, Buffalo furnace	20.00 to 20.50
No. 2X, eastern del., Boston	23.15 to 24.15
No. 2X, Buffalo, del., Boston	22.91 to 23.91
Continental foundry f.o.b. Boston	19.00 to 20.00
India, 2.25 to 2.75 silicon, delivered cars, Boston	20.00 to 21.00
No. 2 Alabama, Birmingham	21.00
No. 2 Alabama, Cincinnati	24.69
No. 2 Tenn., Birmingham	21.00
No. 2 Tenn., Cincinnati	24.69
No. 2 Alabama, Philadelphia	27.01
No. 2 Alabama, Chicago	27.01
No. 2 Alabama, Chicago (barge and rail)	26.18
No. 2 Alabama, Boston (rail and water)	27.91
No. Alabama, Cleveland	27.01
No. 2 Alabama, St. Louis	25.42
No. 2X, Virginia, furnace	22.50 to 23.25
No. 2X, Virginia, Phila	27.67 to 28.42
No. 2X, Virginia, Jersey City	28.04 to 28.79
No. 2X, Virginia, Boston	28.42 to 29.17
Gray forge, eastern Pa.	21.00 to 21.25
Gray forge, val. del. Pitts.	18.76 to 19.26
Low phos., standard, valley	27.50
Low phos., standard, Phila.	24.26 to 24.76
Low phos., Lebanon, furnace	23.00 to 24.00
*Low phos., English (nominal)	24.01 to 24.51
Charcoal, Birmingham	29.00 to 30.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $24.50; 6 per cent $25.50; 7 per cent $26.50; 8 per cent $27.50; 9 per cent $29.00; 10 per cent $31.00; 11 per cent $33.00; 12 per cent $35.00; 13 per cent $37.00; and 14 per cent $39.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $33.00; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39.00; 14 per cent $41.00; 15 per cent $44.00; 16 per cent $46.00; 17 per cent $48.50.

*Duty paid, delivered Philadelphia consumers.

Cleveland, Aug. 30.—The volume of pig iron sales continues small, furnace interests with headquarter here booking a total of around 12,000 tons in the past week. Fourth quarter business has not developed momentum, due to the many large sales for that period during the July buying movement. In contrast with restricted sales, shipments are going forward on an unusually high level for this season of the year; August far surpassed those of the month last year, and for some interests the shipments were the best for the month in six years. Prices are a shade easier in nearby districts. Some lake furnaces quoting $19, base, for shipment in western Ohio and Indiana have lost business to valley furnaces quoting $17.50, and other lake furnaces naming $18. Cleveland makers continue to quote $19, for local delivery, and in outside competitive territory $18 to $18.50, Cleveland melters are covered, and sales have been limited to a few carloads. The Westinghouse Electric & Mfg. Co. had not closed up to Tuesday on its inquiry for 2000 tons for Cleveland. An inquiry is current here for 600 tons of several grades for an Oil City, Pa. melter.

Chicago, Aug. 31.—Spot buying of pig iron specialties is fairly active, and piecemeal contracting for northern No. 2 and malleable continues at a steady rate. Spot inquiries for the latter two grades are not heavy, consisting for the most part of miscellaneous lots of 500 tons and less. Inquiry for charcoal iron is for one to three carload lots. Some fair inquiries are noted for silvery iron. Shipments in August compare favorably with any month this year. Fourth quarter contracts are being made on the basis of $21, Chicago furnace.

Cincinnati, Aug. 31.—Recent pig iron sales aggregate several thousand tons.

The Canton Malleable Co., Canton, O., bought 1000 tons of malleable from the American Rolling Mill Co., Columbus, O., while the New Idea Spreador Co., Coldwater, O., pur-

(*Concluded on Page 603*)

Coke

Beehive Market Buoyant, Prices Stronger—Fuel More in Demand for Heating

A STRONGER tone again prevails in the Connellsville beehive coke market, and leading makers are holding for a minimum of $3.50 on contracts. It appears that none of the recent inquiries was closed at over $3.25. A new inquiry for 15,000 tons monthly is expected to test the market. Heating coke is more in demand.

Pittsburgh, Aug. 31.—The beehive coke market is more buoyant with greater strength evidenced. Possibilities for a strong market for the remainder of the year are more numerous. Interest centers in the Central Furnace Co.'s inquiry for 15,000 tons monthly. It is understood practically all sellers are bidding $3.50. Many makers are so well covered it is believed doubtful if anyone will be able to take this business. The general opinion is if the Central company closes at $3.50 this will insure a good market for the remainder of the year. So far as known no contracts have been closed over $3.25. The minimum asking price now is $3.50 for contracts. The spot furnace market is $3.15 to $3.25. Several small sales of spot standard coke are reported at $3.25. One broker seeking off-grade coke is unable to buy under $3.25. Inquiries are current from six to eight foundries and steelworks seeking heating coke, an aggregate of 18,000 tons, over the remainder of the year. Cokemakers are watchful in adding to commitments because heavy export orders for coal are taking men from the ovens. Spot foundry coke is quotable at $4 to $4.50, while for contract the price is $4.50 to $5. Some users still hesitate to place business and face higher quotations. The coal market continues strong, British shipments still tending to firm prices.

Production of coke in the Connellsville region for the week ended Aug. 21 was 126,860 tons, compared with 122,410 tons the preceding week, according to the *Connellsville Courier*.

Boston, Aug. 31.—Some reflection of the strong bituminous market is found in better buying of foundry coke. Spot foundry grades demand a premium of nearly $1 above the contract price. The foundry melt in the district is unchanged. Some tendency to increase reserve stocks is reported. The price of by-product foundry coke on contract is $12, delivered.

New York, Aug. 31.—The recent advance in the price of beehive coke of the furnace grade is being held as far as September delivery is concerned; this is firm at $3.50, Connellsville. On spot furnace coke, however, this price can be shaded somewhat. Shipments of foundry coke on contracts continue good but there is not much spot demand and the spot market continues $4 to $5.25, Connellsville, depending on the brand and circumstances. The market on by-product foundry coke continues $9.59 to $10.77, delivered at Newark and other northern New Jersey consuming points, depending on the freight.

Cincinnati, Aug. 31.—An advance of 50 cents a ton in the price of domestic coke, effective Sept. 1 was announced today by producers in this district. The advance will put egg and walnut on the basis of $5.50 and No. 2 nut at $5 ovens.

No change in by-product foundry coke prices for September delivery, will be made, it was announced. Lack of sufficient coal has interfered slightly with production of beehive coke in the Wise county and New River districts.

St. Louis, Aug. 31.—Current demand for foundry coke continues active, reflecting the unusually high rate of activity at iron and steel plants. The volume of contracting by domestic dealers is well up to the seasonal average of the past five years. Prices of domestic coke will be advanced slightly Sept. 1. Shipments of industrial coke are holding up well. Production of by-product coke is close to capacity, and shipments are about 75 per cent of current make.

Birmingham, Ala., Aug. 30.—Coke quotations are firm at $5.50 to $6 for the foundry grade. Practically all by-product ovens are in operation. Few of the beehive ovens are going. Contracts are being made or are in sight which indicate good activity through the entire winter. Coal production in Alabama is improving rapidly.

Trumbull-Vanderpoel Electric Mfg. Co., Hartford, Conn., has increased capital from $400,000 to $750,000 by issuing 20,000 shares of preferred stock at $25 par and 10,000 shares common at $25 par, replacing 2000 shares of each class at $100 par.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.15 to 3.25
Connellsville foundry	4.00 to 5.00
New River foundry	6.50 to 7.00
New River furnace	4.50 to 5.00
Wise county furnace	4.00
Wise county foundry	4.50 to 5.00
Alabama foundry	5.50

By-Product

Foundry, Newark, N. J.; del.	$9.59 to 10.77
Foundry, Chicago, ovens	9.75
Foundry, New England, del.	12.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	10.00
Foundry, Birmingham	5.50 to 6.00
Foundry, Indianapolis, del.	10.25
Foundry, Ashland, Ky.	7.50
Foundry, Portsmouth, O.	7.50

Ferroalloys

German Spiegel Sold in Chicago—Specifications Are Heavy

New York, Aug. 31.—It is learned that 1500 tons of German spiegeleisen was sold during the recent contracting movement. This metal is to be delivered over the remainder of this year to consumers in the Chicago territory. The price is understood to have been $33.50, duty paid, New Orleans. The duty is 75 cents per ton. Domestic producers are making heavy shipments on contracts and have practically no spot spiegeleisen to spare. Ferromanganese consumers continue to take heavy shipments on their contracts, and these cover current requirements generally so that there is not much spot demand.

Special ferroalloys are in a steady market. Users are well covered on old contracts and taking shipments at high rates. Prices are unchanged. Some interest was reported in tungsten powder lately. Tungsten ore is quiet on new business but some interest is reported in future requirements. Stocks remain of good size, with asking prices $10.50 a short ton unit and up. For future shipment around $3.30 to $3.35 a short ton unit, c.i.f. is quoted.

Pittsburgh, Aug. 31.—Heavy specifications against contracts enabled sellers of ferromanganese in August to exceed the shipments of last August. The only selling is of occasional spot cars of which $95, seaboard, governs. The leading maker of spiegeleisen continues to ship 16 to 19 per cent material, which is priced at $33, domestic furnace, or $1 below the level for the 19 to 21 per cent grade.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resales	$88.00 to 100.00
Ferromanganese delivered Pittsburgh	92.74 to 104.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	32.00 to 34.00
Ferrosilicon, 50 per cent freight allowed	85.00 to 87.50
Ferrotungsten standard, per pound contained	1.00 to 1.05
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent materials)	122.50

†Duty paid.

The Market Section

Plates

Eastern Demand Is Heavy—Dearth of Orders in Middle West—Prices Show Steadiness

THE eastern plate market is exceptionally active, in contrast with light or moderate demands elsewhere. Eastern mills are operating full, and are having difficulty in making deliveries; consumers are covering for fourth quarter. A pipe line at Saginaw, requiring 2000 tons has been placed; the Providence, R. I., 6000-ton pipe line project has been awarded for concrete.

PLATE PRICES, PAGE 588

New York, Aug. 31.—Demand for plates has improved here. One eastern mill says its bookings in the New York territory have been fully 50 per cent greater during the past week than for any similar period in some time. This swelling in demand seems to be general. In addition to the actual orders placed, the majority of consumers in this territory now have contracted for their requirements during the fourth quarter. The price on this business is the same as on current requirements, namely 1.90c, base Pittsburgh, equivalent to 2.24c delivered New York. Eastern mills are operating full and are scheduled ahead to such an extent that they have had difficulty recently in making deliveries required. This condition, in turn, has led a good many consumers to order their plates farther ahead. Some of these consumers had been depending on the plate mills for practically warehouse deliveries. Part of the improvement of the past week was due to buying by railroads. Manufacturers of gasoline dispensing tanks also have been taking considerable tonnage. It is expected that the eastern railroads generally shortly will put out inquiries for their fourth quarter requirements. Several penstock projects which involve moderate plate tonnages are pending. One of these is the Rio development in New York state, on which Charles T. Main, Boston, is the engineer.

Cleveland, Aug. 31.—Conditions in the plate market are practically the same as those that have prevailed for some weeks. Tonnage is coming from many quarters and in the aggregate, is holding up very well. Some sellers report August tonnage was in excess of July. Award has been made to the Biggs Boiler Works Co., Akron, for a pipe line in Saginaw, Mich., which will require about 2000 tons. Another pipe line for Providence, R. I., requiring 6000 tons which was bid upon from this district, has been awarded to makers of concrete pipe. No further action has been taken on pending marine projects. Plate prices are steady at 1.90c, Pittsburgh or 2.09c, Cleveland.

Pittsburgh, Aug. 31.—Heavy shipments of plates in July and August have cut down to a considerable extent backlog of Pittsburgh district makers. Car builders are taking a negligible tonnage at this time. General commercial uses and pipe mills are the mainstays of the plate movement. Some small fourth quarter contracting is reported on the basis of 1.90c, Pittsburgh, with several smaller makers understood to be pressing contracting. The September outlook in plates is less bright than that in bars or shapes, but Pittsburgh district mills claim to be standing upon 1.90c.

Chicago, Aug. 31.—Demand for plates has been less the past week than that for bars or shapes, but is fair considering dearth of railroad buying. Oil storage tank business, which has been a spur to the plate market, fell off. Less than 2000 tons have been closed in the past week. Fourth quarter inquiry, however, shows desire of fabricators to cover for the period. Mills are opening books at 2.10c, Chicago. Mills are able to make prompt shipments. Fabricators continue to hold light stocks.

CONTRACTS PLACED

6000 tons, concrete pipe for Providence, R. I., to Lock Joint Pipe Co.
3000 tons, tanks for the Panhandle district, Tex., to the Riter-Conley Co.
2000 tons, pipe line, Saginaw, Mich., to Biggs Boiler Works Co.
250 tons, pipe line in Columbia, S. A., to Pacific Coast Engineering Co.

CONTRACTS PENDING

7000 tons, pipe line for Southern California Edison Co. at San Diego, Calif.; bids will be called for soon.
170 tons, North end reservoir and standpipe, Tacoma, Wash.; general contract to Gerrick & Gerrick, Seattle.
100 tons, small tanks for Shell Oil Co., Martinez, Calif.; bids being received.

Semifinished

Inquiries Coming Out for Fourth Quarter — Present Prices May Be Extended

SOME inquiries are being received for semifinished steel for fourth quarter, but mills have not yet opened their books, though there is some intimation that prices will be the same as for the third quarter. Purchasing for the remainder of this quarter is light, but specifications on contracts are of large proportions.

SEMIFINISHED STEEL PRICES, PAGE 588

Pittsburgh, Aug. 31.—In several instances users of semifinished steel have doubled up their requirements, but the market on semifinished material generally is devoid of outstanding activity. At this phase of the quarter, users are more engaged in specifying than in new buying. The added impetus in the sheet market is being reflected to some extent in sheet bars. Activity in billets is relatively lower than in the other semifinished lines. Prices are unchanged on the basis of $35, base, for small billets, $40 for forging billets, $36 for sheet bars, $45 for wire rods, and 1.90c for skelp.

The Carnegie Steel Co. is rolling an order of 42,000 tons of skelp for the National Tube Co. to cover the rolling of pipe for the large pipe line of the Andean Pipe Line Co. in Colombia, South America, awarded the latter some months ago.

New York, Aug. 31—Wire rod prices are being cut here and there. The usual price continues $45, Pittsburgh, on carloads, but where attractive orders are involved lower prices are being done.

Philadelphia, Aug. 31.—One consumer in this territory bought several hundred tons of billets in the past week. Several other smaller sales also were transacted. Prices are unchanged.

Cleveland, Aug. 31.—Activity in the semifinished steel market is limited to specifications, which continue to come out at a satisfactory rate. The Cleveland mill interest has started up another open-hearth, now having 12 of its 14 active, and giving it practically full operations. Quotations still are $36, Cleveland or Youngstown, for sheet bars, and $35 for standard billets and slabs.

Youngstown, Aug. 31.—Since contracting for fourth quarter supplies of sheet bars and billets still is two weeks in the future, little new business is noted in semifinished material just now. Shipments are good and consumers are taking their quotas as usual. Intimation is given by important mills here that they expect no change in quotations on either sheet bars or billets for the final quarter of this year from the present levels of $36, Youngstown or Pittsburgh, for sheet bars; and $35 for billets.

Chicago, Aug. 31—Demand for small billets is fairly active, total sales the past week aggregating nearly 4000 tons. Sheet bar demand is fair. Small billets are held at $35, base, and $36 is quoted for sheet bars.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	13.00 to 14.00
Boston (dealers)	11.50 to 12.50
Buffalo, No. 1	17.75 to 18.25
Buffalo, No. 2	16.50 to 17.00
Chicago	14.00 to 14.50
Cincinnati (dealers)	14.00 to 14.50
Cleveland, No. 1	15.00 to 15.50
Cleveland, No. 2	14.00 to 14.50
Detroit	13.50 to 14.00
Eastern Pennsylvania	17.00 to 17.50
Bethlehem delivery	15.50 to 16.00
New York (dealers) (yard)	11.00 to 11.50
Pittsburgh	17.50 to 18.00
St. Louis	13.75 to 14.25
Valleys, No. 1	18.00

COMPRESSED SHEETS

Buffalo	16.75 to 17.25
Chicago	12.50 to 13.00
Cleveland	14.00 to 14.50
Detroit	11.75 to 12.25
Pittsburgh	16.50 to 17.00
Valleys	17.50

BUNDLED SHEETS

Buffalo	12.00 to 12.50
Cincinnati (dealers)	10.00 to 10.50
Cleveland	12.50 to 13.00
Eastern Pennsylvania	14.00 to 14.50
Pittsburgh	15.50 to 16.00
St. Louis	8.00 to 8.50

SHEET CLIPPINGS, LOOSE

Chicago	8.25 to 8.75
Cincinnati	7.50 to 8.00
Detroit	7.50 to 8.00
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Buffalo	17.25 to 17.75
Chicago	17.25 to 17.50
Cincinnati (dealers)	18.50 to 19.00
Cleveland (over 6 ft.)	15.50 to 16.00
Detroit	16.00 to 16.50
St. Louis	16.75 to 17.25

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	13.50 to 14.00
Buffalo	15.25 to 15.50
Chicago (net)	14.25 to 14.75
Cincinnati (dealers) (net)	10.00 to 10.50
Cleveland	13.00 to 13.50
Detroit (net tons)	13.00 to 13.50
Eastern Pennsylvania	14.50
New York (dealers)	11.00 to 12.00
Pittsburgh	14.50 to 15.00
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	18.50 to 19.00
Cincinnati (dealers)	17.00 to 17.50
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	22.00 to 22.50
Cleveland, billet and bloom crops	19.00 to 19.50

SHOVELING STEEL

Chicago	14.00 to 14.50
Pittsburgh	13.00 to 13.50
St. Louis	13.75 to 14.25

KNUCKLES, COUPLERS, SPRINGS

Chicago	17.50 to 18.00
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	19.50 to 20.00
St. Louis	15.00 to 15.50

FROGS, SWITCHES, GUARDS

Chicago	15.75 to 16.25
Eastern Pennsylvania	16.00 to 16.50
St. Louis	15.50 to 16.00

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	16.25 to 16.75
St. Louis	15.00 to 15.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.00 to 13.00
Boston (dealers)	11.50 to 12.00
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	15.50 to 16.00
Chicago, No. 1	14.75 to 15.25
Chicago, No. 2	14.25 to 14.75
Cincinnati, No. 1 (dealers)	12.00 to 12.50
Cleveland, No. 1	12.50 to 13.00
Eastern Pennsylvania	17.50 to 18.50
New York, No. 1 (dealers)	14.50 to 15.00
Pittsburgh, No. 1	14.50 to 15.00
Pittsburgh, No. 2	17.50 to 18.00
St. Louis, No. 1	13.50 to 14.00
St. Louis, No. 2	13.75 to 14.25

WROUGHT PIPE

Boston (dealers)	11.00 to 11.50
Eastern Pennsylvania	16.00 to 16.50
Buffalo	15.00 to 15.50
New York (dealers)	12.00 to 12.25

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00

BUSHELING

Buffalo	16.75 to 17.25
Chicago, No. 1	12.50 to 13.00
Chicago, No. 2	9.00 to 9.50
Cincinnati, No. 1 (dealers)	8.50 to 9.00
Cleveland, No. 1	11.75 to 12.25
Cleveland, No. 2	11.75 to 12.00
Pittsburgh, No. 1	15.50 to 16.00
St. Louis No. 1	12.00 to 12.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 8.50
Boston	9.25 to 9.50
Buffalo	10.75 to 11.25
Chicago	7.75 to 8.00
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.00 to 11.50
Detroit	9.25 to 9.75
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	9.75 to 10.25
Pittsburgh	13.00 to 13.50
St. Louis	8.00 to 8.50

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.50
Birmingham (plain)	8.00 to 8.50
Boston (chemical)	10.50 to 11.00
Boston (dealers)	8.50 to 9.50
Buffalo	12.00 to 12.50
Chicago	11.50 to 12.00
Cincinnati (dealers)	7.50 to 8.00
Cleveland	11.75 to 12.25
Detroit	10.00 to 10.50
Eastern Pennsylvania	14.00 to 14.50
Eastern Pennsylvania (chem.)	16.00 to 17.00
New York (dealers)	9.75 to 10.75
Pittsburgh	13.00 to 13.50
St. Louis	11.00 to 11.50
Valleys	13.50

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.75 to 9.00
Buffalo	12.00 to 12.50
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.75 to 12.25
Detroit	9.50 to 10.00
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.75 to 10.25
Pittsburgh	13.00 to 13.50

PIPES AND FLUES

Chicago (net)	9.75 to 10.25
Cincinnati (dealers)	9.00 to 9.50
St. Louis	11.00 to 11.50

RAILROAD GRATE BARS

Buffalo	14.00 to 14.50
Chicago (net)	14.00 to 14.50
Cleveland	13.50 to 13.75
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.25 to 12.00
St. Louis	15.00 to 15.50

FORGE FLASHINGS

Boston (dealers)	9.50 to 10.00
Buffalo	14.00 to 14.50
Chicago	9.25 to 9.75
Cleveland (under 10 in.)	12.50 to 13.00
Cleveland (over 10 in.)	12.50 to 13.00
Detroit	9.25 to 9.75
Pittsburgh	14.50 to 15.00

FORGE SCRAP

Boston (dealers)	9.00 to 9.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago (net)	20.00 to 20.50
St. Louis	21.00 to 21.50

Iron Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.50 to 10.00
Buffalo	13.50 to 14.00
Chicago	12.50 to 13.00
Cleveland	12.50 to 13.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	16.00 to 16.50
St. Louis	11.00 to 11.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston (shipping point)	18.00 to 18.50
Buffalo	16.50 to 17.00
Chicago	20.75 to 21.25
Cleveland	16.00 to 16.50
Eastern Pennsylvania	23.00 to 24.00
Pittsburgh	23.00 to 23.50
St. Louis	20.50 to 21.00

SHAFTING

Boston (shipping point)	16.00 to 17.00
Chicago	20.25 to 20.75
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	17.50 to 18.00
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$16.00 to 16.50
Boston (consumers)	17.00 to 17.50
Buffalo, iron	16.50 to 17.00
Buffalo, steel	17.00 to 17.50
Chicago, iron	16.50 to 17.00
Chicago, steel	18.00 to 18.50
Cincinnati	13.00 to 13.50
Eastern Pennsylvania	17.50 to 18.00
New York iron (dealers)	12.50 to 13.50
Pittsburgh, iron	17.00 to 17.50
Pittsburgh, steel	19.50 to 20.00
St. Louis, iron	15.25 to 15.75
St. Louis, steel	17.50 to 18.00

NO. 1 CAST SCRAP

Birmingham, cupola	16.50 to 17.00
Boston	18.00 to 18.50
Buffalo	16.25 to 16.75
Chicago, No. 1 machinery	19.00 to 19.50
Chicago No. 1 railroad or agricultural	18.25 to 19.00
Cincinnati No. 1 Machinery cupola (net tons dealers)	18.50 to 19.00
Cleveland, cupola	16.75 to 17.25
Detroit (net tons)	15.50 to 16.00
Eastern Pennsylvania, cupola	18.00 to 18.50
New York, cupola (dealers)	14.50 to 15.00
Pittsburgh, cupola	17.00 to 17.50
San Francisco, delivered	20.00 to 21.00
Seattle	16.50
St. Louis, railroad	16.50 to 17.00
St. Louis, agricultural	16.50 to 17.00
St. Louis, machinery	19.00 to 19.50
Valleys	17.50

HEAVY CAST

Boston	15.50 to 16.50
Buffalo (breakable)	14.00 to 14.50
Cleveland	13.00 to 13.25
Detroit (Automobile) (net tons)	20.50 to 21.00
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	12.75 to 14.00
Pittsburgh	16.50 to 17.00

MALLEABLE

Boston, railroad	19.50 to 20.50
Buffalo	17.50 to 18.00
Chicago, agricultural	15.25 to 15.75
Chicago, railroad	17.50 to 18.00
Cincinnati, railroad (dealers)	15.50 to 16.00
Cincinnati, agricultural (dealers)	14.50 to 15.00
Cleveland, agricultural	17.50 to 18.00
Cleveland, railroad	18.50 to 19.00
Detroit	15.00 to 15.50
Eastern Pennsylvania, railroad	17.00 to 18.00
Pittsburgh, railroad	18.50 to 19.00
St. Louis, agricultural	15.00 to 15.50
St. Louis, railroad	15.00 to 15.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	15.50 to 16.50
Boston (dealers)	11.00 to 12.00
Buffalo	17.25 to 17.75
Chicago	17.25 to 17.50
Cleveland	16.00 to 16.25
Eastern Pennsylvania	17.00 to 17.50
New York	13.75 to 14.25
Pittsburgh district	18.00 to 19.00
St. Louis	16.75 to 17.25

LOCOMOTIVE TIRES

Chicago, No. 1	18.25 to 18.50
Chicago, cut	18.50 to 19.00
St. Louis, No. 1	16.00 to 16.50

LOW PHOSPHORUS PUNCHINGS

Chicago	16.50 to 17.00
Eastern Pennsylvania	19.00 to 21.00
Pittsburgh	19.00 to 19.50

Scrap

Better Prices and Some Sales—Dealers Buying and Speculating More Actively

WITH little change in quotations, but that upward, the market in iron and steel scrap appears to be strengthening and gradually working to higher levels. Dealers have been forced to pay as much as they receive to cover some contracts. Some substantial buying has been done in the East, with consequent uplift in prices. Railroad offerings are fairly large.

Chicago, Aug. 31.—While values of iron and steel scrap actually are no higher, some observers see a shade of strength as a result of dealers trading to meet obligations. This strength has disclosed itself in recent bidding up of railroad lists, in which higher than $15 was paid for heavy melting steel. It is reported also that an independent steel producer paid $15 for melting steel, but that this steel was of a highly selective grade. One independent offered no more than $14. Leading steel producers in the Chicago district have bought little scrap in August, and show no signs of eagerness to enter the market. Pressure is required to liquidate scrap on tracks. Dealers are covering on orders and are speculating to some extent. While dealers continue to quote $14 to $14.50, a tendency is shown to hold out for 25 to 50 cents a ton above these levels. Cast borings, No. 1 machinery cast and several other grades are reported to have been sold at 25 cents above quoted levels.

Boston, Aug. 31.—Prices of iron and steel scrap continue to advance. Heavy melting steel is firm at $12.50 with at least two sales in eastern Pennsylvania reported at $17.50 delivered, equivalent to $13 shipping point this district. The Boston & Maine railroad has a list out totaling 3000 tons of miscellaneous scrap.

New York, Aug. 31.—Substantial buying and advancing prices, feature the local scrap market. The Lukens Steel Co. closed on 20,000 tons of heavy melting steel and the Worth Steel Co. on 10,000 tons, both paying $17.50, delivered, an advance of 50 cents a ton within a week, when it is considered that the Bethlehem Steel Corp., with a rate from New York of less than $1 under the other two points, paid $16, delivered, on 10,000 to 15,000 tons only a few days before. As a further reflection of the scarcity of material, some dealers just prior to the latest Lukens purchase were paying $17.25, delivered, for melting steel for shipment to that company on orders booked at $17; and for Worth, some were known to have paid at least $17 on tonnage placed at that figure.

Philadelphia, Aug. 31.—Heavy buying has featured the iron and steel scrap market the past week, this being done in heavy melting steel by the Lukens Steel Co. and the Worth Steel Co. Central Steel Co., Pencoyd Iron Works and Phoenix Iron Works bought cast scrap. Much other buying has been, most by dealers on contracts. Supplies are large and prices higher on several grades.

Buffalo, Aug. 30.—Dealers are seeking material for shipment on new orders and will pay around $17.75 for choice heavy melting steel with other materials proportionately higher on dealer basis. Reports are now that some selected heavy melting steel brought as high as $18.50 at consumers' mills and that a tonnage of ordinary grade could not be bought under $17.

Pittsburgh, Aug. 31.—Iron and steel scrap appears a shade firmer. While no sales of heavy melting steel have been made the past week, it is more apparent that $18 is the minimum which a consumer could do on that grade. Dealers have offered $17.75 for steel at Vandergrift, Pa., and a consumer at Steubenville, O., is said to have been quoted $18.25 to $18.50. The Pennsylvania railroad will open bids Sept. 1 on 38,337 tons.

Cleveland, Aug. 31.—Iron and steel scrap buying continues largely a dealer proposition. Consumers are taking little tonnage although one Cleveland steelmaker in the past several days bought a quantity of steel at the prevailing market price.

Detroit, Aug. 31.—Conditions in iron and steel scrap are slightly improved. While buying continues limited, there is some increase in activity. Prices are unchanged, and steadier.

St. Louis, Aug. 30.—Iron and steel scrap continues slow and featureless. Consumers are not disposed to purchase, and dealers complain of scarcity of new business. Old orders have been heavily reduced, and with no new ones materializing, the market is marking time. Railroad offerings total 56,340 tons, including the following lists: Missouri Pacific, 1600 tons; Chicago, Milwaukee & St. Paul, 8400 tons; Union Pacific, 2800 tons; Big Four, 3400 tons; Pennsylvania, 38,740 tons; Chicago & Alton, 1400 tons.

Birmingham, Ala., Aug. 30.—No change in the iron and steel scrap market noted here. Heavy melting steel still lags and quotations are $15 per ton.

Sheets

Market Adjusting Itself to New Black and Galvanized Base—Full-Finished Advanced $2

SOME sales of black and galvanized sheets have been made on the new price levels consequent to the adoption of No. 24 gage as base. All mills have not yet taken action, and some continue to quote on a base of No. 28 gage. The price range on No. 28 black is 3.10c to 3.25c, and on No. 28 galvanized 4.25c to 4.35c. Full finished sheets have been advanced $2 a ton to 4.30c.

SHEET PRICES, PAGE 588

Youngstown, Aug. 31.—Such important makers of full-finished autobody sheets as the Newton Steel Co., the Mansfield Sheet & Tin Plate Co. and the Youngstown Sheet & Tube Co. among northern Ohio mills have put in effect an advance of $2 a ton to a base of 4.30c, Pittsburgh, and already have taken some good tonnages. Additional orders for black and galvanized sheets are flowing steadily to mills here, some of this new business possibly being in anticipation of the new gage differential schedule taking effect on Wednesday. Some of the new bookings are for quick delivery which indicates immediate need for the material. Quotations on black sheets No. 28 gage have hardened around 3.15c, Pittsburgh, although all sellers have not yet abaondoned 3.10c on attractive lots. The galvanized sheet price is unchanged at 4.25c to 4.30c, base and blue annealed at 2.30c. Makers of black sheets are gaining better backlogs each week. One important independent valley maker now is booked for five to six weeks, and another for four weeks, while others are scheduled for ten days to two weeks but are expending operations. Generally the mills look for a busy autumn in the sheet trade.

Boston, Aug. 31.—Marked increase in the demand for black sheets developed during the past week. The price is firm at 3.15c, Pittsburgh. Galvanized and blue annealed sheets are in less demand at unchanged prices.

New York, Aug. 31.—Only a few sheet companies as yet have followed the Youngstown Sheet & Tube Co.'s new method of basing galvanized and black sheet prices on No. 24 gage. These companies have announced that they will quote on the new base effective Sept. 1, and that they will follow the same gage differentials as

announced by the Youngstown company. Other companies have not taken any definite action, but expect to follow the new practice. In the meantime the sheet market here is the strongest that has been experienced in a long time. Some of the middle western companies are booked until some time in October. The eastern makers are operating full with good order books. On galvanized No. 28 gage the price is quite firm at 4.30c, base Pittsburgh, equivalent to 4.64c delivered New York. On black sheets the market is stiffer, and 3.15c base Pittsburgh for No. 28 gage is less frequently shaded. The market on blue annealed sheets continues firm at 2.30c base Pittsburgh, for No. 10 gage.

Pittsburgh, Aug. 31.—A two price base on black and galvanized sheets results for the present from the promulgation of new gage differentials on those grades by the Youngstown Sheet & Tube Co. Those makers, including the American Sheet & Tin Plate Co., who have adopted the No. 24 gage base, are quoting as of Sept. 1, 3.25c on No. 28 black, and 4.35c on No. 28 galvanized. Those makers who are undecided whether to follow, continue to quote the prevailing levels of 3.10c to 3.15c for No. 28 black, and 4.25c to 4.30c on No. 28 galvanized. Makers now on No. 24 gage base claim to have made sales at the new levels. Sales resistance has been least on the heavy gages where prices have been reduced, while no outstanding sales of the lighter gages at advanced prices are reported. At least one mill took business from customers on the former basis, although delivery will fall into October. There have been at least three transactions in which makers have bought black sheets from competitors on the basis of 3.15c for No. 28. It is thought that by the end of this week all makers will have taken a definite stand but it may be several weeks before a single price basis is regained. The leading maker is operating at 83½ per cent of capacity this week and found August specifications the best for any month this year. September requirements of automobile makers will be somewhat larger, apparently, than those of August. Full finished sheets are now on the single price basis of 4.30c, makers assert. Blue annealed sheets are not affected by the new differentials and are unchanged at 2.30c.

Chicago, Aug. 31.—Specifications for galvanized, black and blue annealed sheets are running fully abreast of shipments, thus making deliveries four to six weeks off. The delivery situation is showing no appreciable change. Hot mill operations in the district are almost at capacity. It is understood present prices are subject to withdrawal at any time to provide for adoption of the new card of extras later, under which the quotation for No. 24 gage is to be the base price for black and galvanized. Demand for sheets from roofing manufacturers is expanding. Specifications come from well diversified sources.

St. Louis, Aug. 31.—Sheet demand continues active, with prices steady. There has been a good volume of specifications since the middle of August, and shipments are satisfactory. New business is being placed conservatively, but the volume of orders is large for this time of the year, and well distributed from all classes of consumers.

Cleveland, Aug. 31.—Revision of the base on black and galvanized sheets by a leading independent has not affected the local market materially. The $2 a ton advance is general in this district, although applicable for fourth quarter delivery only in many cases. Blue annealed is steady at 2.30c.

Tin Plate

Output Continues at High Rate—Long Ternes Now $4.85

TIN PLATE PRICES, PAGE 588

Pittsburgh, Aug. 31.—The leading maker of tin plate operated at 93 per cent of capacity last week, and now is maintaining that rate. This is representative of the industry as a whole. With business likely to come from canmakers in Novemer and December, an 85 per cent average for the remainder of the year can be maintained, it is believed. Weather conditions have been better for production in the past week. Long ternes are now quoted at $4.85, base.

New York, Aug. 31.—Tin plate specifications, as usual at this season of the year, are tapering off. Nevertheless the makers continue in a strong position and the earliest delivery most of them can make is in the latter part of October or early in November. The stock list price continues $4.75 to $5, per base box Pittsburgh. Several tin plate orders have been placed during the past week for shipment to Japan. They comprised only a moderate total.

The public service commission has issued an order to permit the Phoenix Iron Co., Phoenixville, Pa., to intervene in the freight rate complaint of the American Motor Body Corp., and others against the Baltimore & Ohio railroad.

Pipe

Large Pipe Line Placed—Cast Buying Is Heavier, Large Jobs Being More Numerous

REPORTED award of a 207-mile 8-inch pipe line, or 15,500 tons, featured the tubular market during the past week. Mills continue high operating rates. Cast iron pipe buying is more active. East Hartford, Conn., placed 4000 tons, Detroit is seeking 6500 tons, and a suburb of Detroit, Wyandotte, Mich., is inquiring for 4200 tons. Awards are more numerous.

PIPE PRICES, PAGE 588 AND 634

Pittsburgh, Aug. 31.—Lapwelded pipe mills continue to operate at capacity but on some sizes deliveries are deferred as long as 10 weeks. With one important maker, replacement tonnage is not quite equal to shipments; with another, its backlog has gained slightly in the past week. It is understood that the Prairie Pipe Line Co., has placed 207 miles of 8-inch pipe or 15,500 tons. Prospective business includes several hundred miles of line pipe for the natural gas division of the Empire Co., in the Amarillo, Tex., field, and extensions by the Oklahoma Pipe Line Co., in southern Oklahoma and northern Texas. Practically prompt delivery can be made on buttwelded pipe. Neither boiler manufacturers nor locomotive builders have been taking their normal quotas of seamless tubing but demand from the automotive industry has been steady. On seamless hot rolled, several additional 5 per cents are being granted, dependent upon competition.

New York, Aug. 31.—Eastern cast pipe buying is featured by the award of 4000 tons of 30-inch pipe for East Hartford, Conn.. and 800 tons for Jersey City. With the exception of 11,000 tons of pipe and fittings for the local water department, on which German makers were low bidders, as previously noted, little is pending in the way of municipal demand. Private buying continues fair and sellers describe the market as being unusually good for August. Prices are steady.

Chicago, Aug. 31.—Two heavy tonnage orders for cast iron pipe, one for 6500 tons of 8 to 12-inch pipe for Detroit and another for 4200 tons for Wyandotte, Mich., a Detroit suburb, are before the trade, while a fair sprinkling of smaller municipal jobs is to be acted upon shortly. Public lettings in the next two weeks are likely to exceed 2500 tons, largely of 500 tons each and less. Among current inquiry is one from Chicago for 700 tons of 6 and 8-inch municipal business, for which bids will be opened next Tuesday. Glamorgan Pipe & Foundry Co. has been awarded the 500 tons of 8-inch class C pipe for Milwaukee on the basis of $38.90, Birmingham. Delivered prices at Chicago, however, are ranging at $48.20 to $50.20 for 6-inch and larger sizes, the reduced price in Milwaukee having been due to heavy competition. Deliveries are averaging 60 days, with prospects of active seasonal business and shipments until spring placements

will develop late in November and through December.

Birmingham, Ala., Aug. 30.—Cast iron pressure pipe shops in this section are operating at capacity and some delay in deliveries still are reported. Quotations are firm at $40 to $41 on 6-inch and over pipe. Some shops in shipping are dividing production to accommodate the greatest number of consumers.

CONTRACTS PLACED

4000 tons, 30-inch pipe, East Hartford, Conn., to the United States Cast Iron Pipe & Foundry Co.

800 tons, pipe for Jersey City, N. J., to R. D. Wood & Co.

500 tons, 8-inch class C pipe, city of Milwaukee, to Glamorgan Pipe & Foundry Co., at $47.40 per ton, f.o.b. Milwaukee. Only other bidder was United States Cast Iron Pipe & Foundry Co., at $47.65.

500 tons, 8-inch class C pipe, Milwaukee, to Glamorgan Pipe & Foundry Co.

111 tons, 48-inch class A for Los Angeles, Spec. 1357, to United States Cast Iron Pipe & Foundry Co.

CONTRACTS PENDING

6500 tons, 8 to 12-inch pipe, city of Detroit; bids open Sept. 3.

4200 tons, 6-inch to 30-inch class B and C pipe, for Wyandotte, Mich.; bids in.

700 tons, 6 and 8-inch pipe, for Chicago; bids open Sept. 7.

418 tons, 4 to 8-inch class B, San Bernardino, Calif.; bids in.

412 tons, 4 to 10-inch class B, Los Angeles, Spec. 740; bids rejected and new bids to be called for soon.

400 tons, 6, 8 and 10-inch class B pipe, for Lyons, Ill.; bids in.

131 tons, San Diego, Calif.; Hazard Construction Co. low bidder.

5½ miles cast iron and terra cotta pipe, sewers, etc., Crystal River, Fla.; bids in Sept. 15 by Horace N. Blanton, manager and clerk.

6900 feet, 24-inch and 3000 feet 18-inch corrugated iron pipe, West Palm Beach, Fla.; bids in.

1300 feet, 8 and 12-inch pipe and 900 feet 18 and 24-inch pipe, for North end reservoir and standpipe, Tacoma, Wash.; general contract to Gerrick & Gerrick, Seattle.

Iron Ore

August Shipments Total 10,500,000 Tons—Caught Up With 1925

Cleveland, Aug. 31.—Shipments of Lake Superior iron ore in August, estimated today at 10,500,000 tons, come within 160,000 tons of equaling the record for any month, established in July, 1918. The largest previous total for August was 10,146,786 tons, in 1917. The movement for the season now is practically even with that of last year, 35,392,926 tons up to Sept. 1, 1926, compared with 35,456,435 tons to Sept. 1, 1925. Shipments from now on are expected to show an increase over the fall months of 1925.

The market continues quiet; inquiries for a few small filling-in lots are noted.

Wrought Iron & Art Glass Fixture Co., New York, has increased capital from $6000 to $75,000.

Bars

Fourth Quarter Contracts Being Booked at Unchanged Price—Production Believed Highest

SHIPMENTS of soft steel bars continue at a high rate. Consumers have not added to stocks and high production of summer quarter has been absorbed fully. Some fourth quarter contracts have been booked and prospects for fall business are unclouded. Production for eight months are believed to have exceeded the same period of 1925, a new record.

BAR PRICES, PAGE 588

Chicago, Aug. 31.—Fourth quarter inquiry from users of soft steel bars and other finish steel is showing itself and mills are opening books at 2.10c. Producers say this quotation is well supported, the current market showing less irregularity than earlier in the season. Nothing is in sight to lessen consumption by steel users. Steel bookings and prospects for fourth quarter reflect the healthy rate of operations and specifications of the past 90 days, which is regarded as having surpassed any similar summer quarter in years. Manufacturers and fabricators generally are having satisfactory operations in this territory, and reports are that some steel users have overspecified slightly for third quarter needs. Farm implement and tractor interests continue to be optimistic as to autumn and next season's sales activities. Despite reports of extended deliveries, bar buyers obtain shipments without difficulty. Larger as well as smaller steel consumers continue to keep light stocks. August specifications for soft steel bars practically kept to the July rate. Tonnage buying fell only slightly behind that of July.

Boston, Aug. 31.—Bars again are in fair demand after the dullness which developed a week ago. According to a leading seller, August in New England ran about 20 per cent ahead of July. The price is firm at 2.00c Pittsburgh or 2.365c delivered.

New York, Aug. 31.—Steel bar demand here is only fair and mills have given no signs of difficulty in making deliveries as fast as required. Buying generally is confined to small lots and 2.00c base Pittsburgh is firm, and in several instances carloads have gone at 2.10c, equivalent to 2.44c delivered New York. Not much interest as yet has been shown by consumers in fourth quarter requirements.

Buffalo, Aug. 30.—Steelmakers here are quoting 2.365c on fourth quarter steel bars, and 2.265c on preferred third quarter business. Mill operation has been increased to about 85 per cent of capacity. Considerable fourth quarter inquiry for bars has developed. Consumers are offering to place combination third and fourth quarter business at the lower price but are hesitating before closing for fourth quarter at the higher figure.

Pittsburgh, Aug. 31.—Shipments of soft steel bars in the eight months ended today are thought to have exceeded those for the corresponding period of 1925, and to have set a record. With inventories of users scarcely larger today than at the beginning of this period, this tonnage has been taken for actual requirements. Barmakers here are agreed that although July and August business exceeded expectations, they cannot foresee any condition that would make for a decided slump over the remainder of the year. Present mill shipments exceed incoming business, largely because users are specifying heavily against third quarter contracts and have not yet committed themselves for fourth quarter. Several makers of bars have been feeling out customers in regard to the final quarter and in some cases contracts have resulted. Both makers and users seem agreed at this time upon 2.00c, Pittsburgh, for the final quarter, and it is claimed this price is governing current business. Small sizes are in relatively heavier demand.

Cleveland, Aug. 31—Orders for steel bars continue large in number though none of them run very high in tonnage. This is the same characteristic of the situation that has prevailed for some time. This day-to-day run of tonnage in August represents a heavier total than for the month of July. New business the past week has not seemed so brisk although this is believed to be only a passing phase. Consumers are buying only such material as they have to and as stocks are low, their orders are frequent. This explains the large number of individual orders. Prices are firm at 2.00c, Pittsburgh or 2.19c, Cleveland.

Hoops and Bands

August Shipments Equal Those of July, Largely Automotive

HOOP PRICES, PAGE 588

Pittsburgh, Aug. 31.—Shipments of hoops and bands in August were substantially the same as July, and makers are entering September with good prospects. As for some time the automotive industry is the most active buyer. Double turn operations still prevail with some makers. The market on hoops and bands 6 inches and under is 2.50c, Pittsburgh, while for over 6 inches it is 2.30c.

Structural Shapes

Featured by Two New York Bridge Awards, Placements This Week Are Largest of Year —Inquiries Are Numerous and Heavy

UNUSUAL midsummer activity marks the structural shape demand of the past week. Awards at the highest point this year are featured by the closing of 29,100 tons for two Kill van Kull bridges in New York. Other large placements include 9000 tons for a civil courts building at St. Louis. Pending work features developments, however, an unusually large tonnage being in negotiation. Chicago fabricators are faced with a boom demand, more than 40,000 tons being pending in specific work, and an indefinitely large amount in projects which are just being launched. Definite pending jobs include more than 15,000 tons of apartments in New York, an 8000-ton office building and 5000 tons for a grade crossing in Buffalo.

STRUCTURAL SHAPE PRICES PAGE 588

Chicago, Aug. 31.—Fabricators in the district are improving their buying of plain material, and are specifying liberally. Specifications practically are equivalent to those of July, although new buying fell behind the July rate. Considering the heavy seasonal awards, fabricators' stocks are extremely low. Shipments are keeping close to specifications. The threatened general tie-up of all Landis award building jobs in the Chicago district is having no effect on contemplated building projects. About 41 per cent of building work at present in Chicago is estimated to be by contractors using Landis award mechanics, but structural work is up on the two buildings now involved in the labor troubles. Structural inquiries include 10,000 tons for the Medina Athletic club; 8000 tons for the Fur Exchange building; 5000 tons for a building at Clark and Madison streets; 1600 tons for a bridge on Crawford avenue; 1500 tons for a highway bridge at Florence, Ill.; 1500 tons for a highway bridge at Louisiana, Mo.; 4000 tons for structure for the Mayo hospitals at Rochester, Minn., and 1500 tons for a Milwaukee hotel. The Mississippi Valley Structural Steel Co. has been awarded 9000 tons for the civil courts building at St. Louis.

Boston, Aug. 31—Miscellaneous buying of structural shapes has held unabated during the past week with the price firm at 2.00c Pittsburgh or 2.365c delivered. Recent contracts have been mostly under 100 tons.

New York, Aug. 31.—Placing of more than 29,000 tons for the two bridges over the Kill van Kull dominates the eastern structural market. Miscellaneous buying as a whole has held up well and has included some large tonnages. Among leading inquiries is 3000 tons for a bank building in Washington. Fabricating material prices continue firm. The great bulk of shape business is going at 2.00c, Pittsburgh.

Philadelphia, Aug. 31.—Structural shape demand was slower during the past week. Shipments now are considerably above new bookings. Mill order books are full, however, and deliveries are extended. The market usually is 2.00c Pittsburgh but 1.90c quotations continue a factor.

Pittsburgh, Aug. 31.—Makers of beams report demand good. Some fabricators are coming into September with heavy order books. One eastern Pennsylvania maker is more than replacing its shipments. A good sized building program for the fall and early winter is contemplated here, but in most cases owners are reluctant to close until the last minute. Shapes to general users still are quoted at 2.00c, Pittsburgh. In a few instances, fourth quarter feelers have developed no resistance to the 2.00c price, and some fourth quarter contracts have resulted.

Cleveland, Aug. 31.—Structural shape inquiries continue to involve small lots here. Several good sized projects are being figured quietly, but demand falls far behind that of other districts. Awards of the week total less than 500 tons. Plain material prices hold steady at 2.19c Cleveland or 2.00c Pittsburgh, with some protections reported extended into the fourth quarter at that level. Fabricated quotations are untested in the present market.

Awards Compared

	Tons
Awards this week	68,535
Awards last week	16,215
Awards two weeks ago	24,928
Awards this week in 1925	34,309
Average weekly awards, Aug.	22,085
Average weekly awards, 1926	27,920
Total awards to date, 1925	1,153,370
Total awards to date, 1926	1,017,817

CONTRACTS PLACED

29,100 tons, 17,100 tons, for a bridge from Perth Amboy, N. J., to Tottenville, Staten Island, N. Y., to McClintic-Marshall Co. and 12,000 tons for a bridge from Elizabeth, N. J., to Holland Hook, Staten Island, N. Y., to Bethlehem Steel Corp.; Bethlehem Steel Corp. is to furnish the plain material for the McClintic-Marshall Co.

9000 tons, Civil Courts building, St. Louis, to Mississippi Valley Structural Steel Co.

5000 tons, medici building, Central Park South, New York, to the Levering & Garrigues Co.

3000 tons, Insurance Exchange building and the Law Finance building, Pittsburgh, to the McClintic-Marshall Co.; Boyle & Robertson Contracting Co., Pittsburgh, general contractor.

2500 tons, refrigerator warehouse for the Seaboard Air Line, Jersey City, N. J., to the American Bridge Co.

1500 tons, Tishman apartment, Park avenue and Seventy-eighth street, New York, to A. E. Norton Inc.

1300 tons, floor plates for the Manhattan bridge, New York, to the American Bridge Co.

1200 tons, Irvine auditorium for University of Pennsylvania, Philadelphia, to the W. N. Kratzer Co. for fabrication, steel to Jones & Laughlin Steel Corp. as previously announced.

1200 tons, Caddo parish court house, Shreveport, La., to Lukens Steel Co.

1200 tons, 30-story hotel, West Forty-second street, New York, to Paterson Bridge Co.

1000 tons, transmission towers, Great Western Power Co., San Francisco, to Pacific Coast Steel Co.

1000 tons, office building, Baltimore, to the American Bridge Co.

925 tons, pottery plant for the Kohler Co., Kohler, Wis., to Worden-Allen Co., in addition to tonnage recently placed.

900 tons, school No. 127, Queens, New York, to Harris Structural Steel Co.

800 tons, 17-story office building, Fifth avenue and Fifty-fourth street, New York, to A. E. Norton Inc.

800 tons, apartment, West Eighty-fifth street, New York, to the Drier Iron Works.

750 tons, four projects for New York, to unnamed fabricator.

650 tons, addition to St. Luke's hospital, New York, to A. E. Norton Inc.

500 tons, Mission Junior high school, San Francisco, to Pacific Coast Engineering Co.

500 tons, Jefferson hotel, Atlantic City, N. J., to Jones & Laughlin Steel Corp.

500 tons, Bronx Gas & Electric Co. building, New York, to McClintic-Marshall Co.

450 tons, apartment building, Sedgewick avenue and 197th street, New York, to the Alpha Iron Works.

450 tons, office building for a power company at Asbury Park, N. J., to the American Brown-Boveri Electric Corp.

400 tons, apartment, Harvard square, Cambridge, Mass., to W. E. Clark, Cambridge.

400 tons, boiler plant for the Glenn Alden Coal Co., Kingston, Pa., to an unnamed fabricator.

400 tons, stone cutting shed, Washington, to Barber & Ross.

400 tons, three apartments, each six stories, New York, to unnamed fabricator.

300 tons, Journal building, Winston-Salem, S. C., to Southern Engineering Co.

300 tons, Orpheum theater, Rockford, Ill., to A. C. Wood Co., Rockford.

300 tons, highway bridge, Wilkes-Barre, Pa., to the Phoenix Bridge Co.

300 tons, apartment, 176th street and Grand avenue, New York, to the Drier Iron Works.

250 tons, refinery addition for the Texas Co., to the Houston Structural Steel Co.

250 tons, highway bridge, Spring Green, Wis., to Lakeside Bridge & Steel Co.

250 tons, American Can Co. plant, Sacramento, Calif., to Palm Iron Works.

250 tons, bridge at Spring Green, Wis., for state highway commission, to Lakeside Bridge & Steel Co.

230 tons, machine shop extension for Northwest Engineering Works, Green Bay, Wis., to Wisconsin Bridge & Iron Co.

200 tons, car barns, Williamsport, Pa., through H. K. Ferguson Co., Cleveland, engineer, to Fort Pitt Bridge Works, formerly announced

as awarded unstated fabricator.
200 tons, school No. 8, Paterson, N. J., to Oltmar Iron Works.
200 tons, Provident Trust Co. building, Philadelphia, to American Brown-Boveri Electric Corp.
160 tons, telephone exchange, Liberty avenue and Milford street, Brooklyn, N. Y., to Eidlitz & Ross.
150 tons, municipal building, New Rochelle, Long Island, N. Y., to Easton Structural Steel Co.
140 tons, Pennsylvania railroad bridge, West Merchantville, N. J., to Fort Pitt Bridge Works.
120 tons, power house for Santa Fe railroad, Bakersfield, Calif., to Moore Drydock Co.
110 tons, Pennsylvania railroad track scale, to Bethlehem Steel Co.
Tonnage unstated, 5-story building for Westinghouse Electric & Mfg. Co. at Sharon, Pa., to unstated fabricator for welded erection. VanBlarcom Co., Cleveland, general contractor.

CONTRACTS PENDING

8000 to 9000 tons, 25-story building, Park avenue, between Thirty-second and Thirty-third streets, New York; approximate bids asked.
5000 tons, approximate, Amherst street grade crossing elimination project, Buffalo, N. Y.; bids in September.
3000 tons, Washington Central Trust Co., Washington; bids asked.
2000 tons, twin apartments, 15 stories high, Eastern Parkway and Underhill avenue, for Turner Bros., Brooklyn, N. Y.; bids asked.
1800 tons, factory addition for the Edward G. Budd Mfg. Co., Philadelphia; bids asked.
1700 tons, 15-story apartment, Ninety-fifth street and West End avenue, New York; bids asked.
1500 tons, 25-story building for Samuel Minskoff, 112 West Fifty-ninth street, New York; bids asked.
1500 tons, 15-story office and theater building, 254-56 West Fifty-fourth street, New York, bids asked.
1200 tons, Pennsylvania Tank Car service shop, Altoona, Pa.; Lyman S. Peck, Inc., Pittsburgh, low bidder on general contract.
700 tons, miscellaneous bridge work for the Norfolk & Western railroad; bids asked.
600 tons, house of correction, Philadelphia; pending.
450 tons, viaduct, Girard, O.; Stange Construction Co. awarded general contract.
446 tons, Orpheum theater, Seattle; pending.
400 tons, 8-story bank and office building for First National bank, Zanesville, O.; bids in this week. Lockwood, Greene & Co. engineers.
400 tons, Fern Rock subway car shops, Philadelphia; pending.
275 tons, sewage treatment plant, Philadelphia; pending.
250 tons, theater, Zanesville, O.; bids in this week. Lockwood, Greene & Co., engineers.
200 tons, buildings for University of California at Davis, Calif.; Western Iron Works low bidder.
200 tons, highway bridge, Brunswick, Ga.; pending.
200 tons, high school, Baltimore; pending.
200 tons, administration building, Holland tunnel, New York; pending.
180 tons, St. Josephs hospital, San Francisco; bids being taken.
150 tons, 4-story office, 336 Madison avenue, New York; pending.
150 to 200 tons, Kinsman road viaduct repairs, Cleveland; bids in.
125 tons, American LaFrance Fire Engine Co. building, Philadelphia; pending.
100 tons, 2-story building, 976 Third avenue, New York; pending.
100 tons, warehouse for Morgan, Inc., Boston; bids being taken.
100 tons, 140-foot steel span highway bridge, Washington; pending.
Tonnage unstated, University of Pennsylvania museum, Philadelphia; pending.

Railroad financing in the first six months of 1926 totaled $221,836,000, all of which was done through the sale of bonds, according to an announcement made by the official organ of the eastern railroads. The amount compared with $346,507,000 in the first half of 1925; $452,947,750 in the like period of 1924; $262,380,000 in the 1923 period, and $489,947,750 in the corresponding six months of 1922.

Concrete Bars

Large Tonnages Placed as Market Takes New Life—Pending Work Heavy

CONCRETE reinforcing demand has taken new life, inquiry and orders being much heavier during the past week. Approximately 20,000 tons is pending in the Chicago district. Two awards at New York took 3500 tons, and inquiries there involve upwards of 15,000 tons. Competition from foreign bars underselling domestic steel $10 to $11 a ton is keener at New York.

REINFORCING BAR PRICES, PAGE 588

New York, Aug. 31.—About 3500 tons of concrete reinforcing bars have been placed for two jobs in this territory, the Seaboard Terminal Refrigeration plant at Jersey City, and the reservoir at Providence. Several good-sized tonnages continue under negotiation, including 9000 tons for the Lake Pontchartrain bridge in Louisiana, 1200 tons for sewers at Jamaica, L. I., 1800 tons for subway construction in New York and many smaller jobs. On a number of the larger jobs here contractors are giving attention to foreign bars, feeling that the great difference in price cannot be ignored. The market on domestic bars for mill shipment is firm at 2.00c base Pittsburgh, equivalent to 2.34c delivered New York. Foreign bars can be had at 1.75c to 1.80c, all charges paid, laid down on the dock.

Pittsburgh, Aug. 31.—Few lettings of concrete bars exceed 25 to 35 tons, but the aggregate of this small business is fair. No awards have yet been made on Pennsylvania road work on which bids were taken Aug. 24. The next letting of Pennsylvania road work is scheduled for Sept. 9. Reinforcing concrete bars out of warehouse are quoted at 2.50c to 2.60c.

Buffalo, Aug. 31—A fair amount of reinforcing bar business is in prospect for September. Large inquiries range up to one lot of 400 tons and several of 100 to 150 tons also are about ready for placement. Mill operation is practically at capacity in this district. Prices are 2.265c for mill shipment lots and 2.75c for mill warehouse stock lots.

Cleveland, Aug. 31.—Inquiries for small lots of concrete bars are more numerous, although large tonnages continue lacking in this district. Awards for the week included several carload lots. New billet bar prices are firm at 2.19c Cleveland or 2.00c Pittsburgh, with one mill quoting 2.05c and 2.10c Pittsburgh on small lots for prompt delivery outside of Cleveland. Rail steel holds at 1.80c to 1.90c mill. New billet bars from jobbers' stocks are quoted 2.50c, Youngstown to 3.00c Cleveland.

Chicago, Aug. 31.—Pending work in reinforcing bars continues to expand. Statements that more than 20,000 tons of bars are required by current inquiry are said to be conservative. Awards in the next 30 days promise to be heavier than for any similar period this year. Contractors and engineers believe the strenuous building activity will continue throughout the autumn and early winter. A fair portion of the pending business is for industrial work. Plans will soon be ready for a 15-story hotel at Milwaukee. Shipments of reinforcing bars to warehouses are regular although subject of some pressure. Reports are heard that warehouses are getting concessions below 2.00c, Chicago.

Awards Compared

	Tons
Awards this week	8,731
Awards last week	8,780
Awards two weeks ago	8,040
Awards this week in 1925	6,900
Average weekly awards, August	6,699
Average weekly awards, 1926	6,336
Total awards to date, 1925	224,667
Total awards to date, 1926	224,156

CONTRACTS PLACED

2400 tons, Seaboard Terminal Refrigeration Co. warehouse, Jersey City, to Truscon Steel Co., through contractors, Bloom-Sinek Co., Chicago.
1000 tons, postoffice garage, Chicago, to Olney J. Dean & Co.
1000 tons, reservoir at Providence, R. I., to Portland Rolling Mills.
1000 tons, Delco Light Co. plant at Moraine City, Dayton, O., to Laclede Steel Co.
450 tons, hotel at Cedar Rapids, Iowa, to Olney J. Dean & Co.
400 tons, Seven Wall Garage, St. Louis, to Missouri Rolling Mill Co.
300 tons, Rocky Branch sewer, St. Louis, to Missouri Rolling Mill Co.
200 tons, Scottish Rite temple, Oakland, Calif., to unstated San Francisco jobber.
200 tons, apartment building, 211 East Delaware place, Chicago, to Inland Steel Co.
200 tons, apartment building, 433 Briar place, Chicago, to Inland Steel Co.
200 tons, paving work for Cedar Rapids, Iowa, to Olney J. Dean & Co.
200 tons, Marcus Loew theater, Pittsburgh, to the Carlem Engineering Co.
185 tons, River Des Peres sewer, St. Louis, to Missouri Rolling Mill Co.
154 tons, highway work in San Diego and Imperial counties, Calif., to unknown interest.
150 tons, grain elevator for Kuth Malting Co., Milwaukee, to Calumet Steel Co.
150 tons, Buffalo Goodwill Industries building, Buffalo, N. Y., to unstated Buffalo fabricator.
125 tons, plant for International Harvester Co. at Columbus, O., reported awarded Joseph T. Ryerson & Son Inc.
110 tons, Lincoln school, Dayton, O., to Bourne-Fuller Co.

107 tons, school at Auburn, Calif., to unnamed interest.
100 tons, St. Mary and St. Joseph school, St. Louis, to Missouri Rolling Mill Co.
100 tons, hotel at Battle Creek, Mich., to Olney J. Dean & Co.

CONTRACTS PENDING

2000 tons, Kymson Building Corp. building, Tenth avenue and Thirty-fourth street, New York; engineers, Parker & Shaffer.
1500 tons, American Book Bindery Co. building, New York; general contract to White Construction Co.
600 tons, bridge, Girard, O.; general contract to Stange Construction Co.
500 tons, Liggett building, Seattle; pending.
425 tons, Division street filtration plant, Cleveland; general contract to Stange Construction Co.
400 tons, United States barracks, Fort Benning, Ga.; John W. Cowper Co., Buffalo, N. Y., low bidder.
327 tons, improvement of Golden Gate Heights, San Francisco; bids in Sept. 15.
300 tons, Orpheum theater, Seattle; pending.
200 tons, Amherst street grade crossing elimination, Buffalo, N. Y.; bids in September.
150 tons, North end reservoir and standpipe, Tacoma, Wash.; general contract to Gerrick & Gerrick, Seattle.
100 tons, school, Portland, Oreg.; to be awarded shortly.
100 tons, grade school building, Chicago; Doerr, Lindquist & Doerr, 128 East 111th street, architects.
Tonnage unstated, University Methodist church, Seattle; pending.
Unstated tonnage, 15-story hotel for Schrader Hotel Corp., Milwaukee; Holabird & Roche, 104 South Michigan avenue, Chicago, architects.

Babbitt Consumption Up

Washington, Aug. 31.—Total apparent consumption of babbitt metal in July, based on reports received from 27 companies by the department of commerce was given at 5,015,464 pounds as compared with 4,963,975 pounds in June and 5,184,196 pounds in July last year.

July sales by producers totaled 3,676,664 pounds as compared with 3,633,691 pounds in June while consumption by producers in July totaled 1,338,800 pounds compared with 1,330,284 pounds in June. Further comparisons follows:

1925	Total apparent consumption	Sales by manufacturers	Consumption by producers
July	5,184,196	3,694,386	1,489,810
Total (7 mos.)	36,959,336	29,017,261	7,942,075
August	5,441,823	4,068,706	1,373,117
September	4,621,033	3,579,780	1,041,253
October	5,550,247	4,169,870	1,380,377
November	4,954,683	3,534,026	1,420,657
December	4,878,806	3,910,160	968,646
Totals	62,405,928	48,279,803	14,126,125
1926			
January	5,152,694	3,708,383	1,444,311
February	5,139,952	3,867,710	1,272,242
March	5,860,453	4,852,805	1,007,738
April	5,229,199	3,817,253	1,411,946
May	4,797,038	3,640,369	1,156,669
June	4,963,975	3,633,211	1,380,284
July	5,015,464	3,676,664	1,338,800
Total (7 mos.)	36,164,775	27,196,875	8,967,900

Car Surplus Decreases

Washington, Aug. 31.—Class 1 railroads on Aug. 8 had 179,771 surplus freight cars in good repair and immediately available for service, according to the American Railway association. This was a decrease of 19,302 cars compared with July 31 or 199,073 cars.

Surplus coal cars in good repair Aug. 8 totaled 45,836, a decrease of 10,949 within approximately a week.

Rails, Cars

Roads Intimate 1927 Requirements Will Equal 1926—Equipment More Active

RAILROAD track material makers are anticipating 1927 programs now being formulated tentatively by the roads. Equipment buying is more active although still scattered. New York Central added 35 to its recent locomotive purchases. Rail bookings of the week at Chicago totaled nearly 10,000 tons for fall delivery.

RAILROAD TRACK MATERIAL PRICES, PAGE 588

Chicago, Aug. 31.—Railroads are making known that their 1927 requirements for rails and track fastenings will be fully equal to 1926. Some inquiry already is taking form. Tonnages of track fastenings closed the past week by one interest totaled more than 1000 tons, while specifications and sales of angles and joints were slightly smaller. Sales of railroad spikes reached nearly 10,000 kegs. Bookings of rails for fall delivery totaled nearly 10,000 tons.

Pennsylvania railroad has arranged with a car building plant for repairs on 2000 hopper cars. American Refrigerator Transit Co., which recently asked for a revision of bids for its inquiry for 2000 refrigerating cars, is expected to close early in September. Chicago, Great Western is revising specifications on its recent inquiry for 500 freight cars. Operations of car builders continue to dwindle. Tie plates are firm at 2.35c, Chicago, despite reports of shading.

Pittsburgh, Aug. 31.—Some secondary rail buying is looked for shortly by makers in this district although no definite inquiry is before them. Light rail buying continues to reflect the stir in the soft coal fields resulting from the British coal strike. No secondary buying of track fastenings seems in prospect.

New York, Aug. 31.—Fresh car inquiry is slack, with little placed. Locomotive buying is featured by the placing of 35 additional locomotives by the New York Central railroad for its various subsidiary roads.

Although full returns are lacking on August freight car buying, it is believed in some quarters that it was the slowest this year, even falling under May when 448 were placed. Several sizeable lists are pending and September is expected to show substantial improvement in buying by some of the leading railroads. This has been the experience of several recent years.

Japanese interests in this country are under the impression that while American railmakers are not actual parties to the international rail syndicate, there are indications that the Americans at least are not working out of harmony with their foreign competitors.

This impression largely is based on the fact that American rail mills recently have been quoting higher prices on Japanese rails with the result that several Japanese orders have gone to Europe.

CAR ORDERS PLACED

Inland Waterways Corp., Washington, 40 gondolas to the Tennessee Coal, Iron & Railroad Co.
South African railways, 75 fruit cars, to unstated French builder.
Consolidation Coal Co., 500 mine cars, to Watt Car & Wheel Co.
Southern Pacific, 11 diners, to the Pullman Car & Mfg. Corp.

LOCOMOTIVE ORDERS PLACED

Gulf, Mobile & Northern, two locomotives, to the Baldwin Locomotive Works.
New York Central 35 locomotives all to American Locomotive Co. as follows: Pittsburgh & Lake Erie, 10, Michigan Central, 10, 10 for the Big Four and 5 for Boston & Albany.

CAR ORDERS PENDING

Chicago & Northwestern, two baggage cars; pending.
Darling & Co., 10 box cars; inquiry withdrawn. To buy motor trucks instead.
Gulf, Mobile & Northern, two steel passenger car underframes; bids asked.
Illinois Traction Co., 100 gondolas; pending.
Manila railroad, 12 passenger coaches; contemplated.
New Orleans Public Belt line, 50 box cars; pending.
New York Central, 124 miscellaneous passenger cars; bids opened.
New York Rapid Transit Co., 13 freight cars; bids opened.
Philadelphia, 150 subway cars; bids in.
Union Pacific, 7 baggage and sleeper cars; pending.

LOCOMOTIVE ORDERS PENDING

Richmond, Fredericksburg & Potomac, four Pacific type locomotives and two switch engines; bids asked.

Purchases Billet Furnace

A complete recuperative billet heating furnace of the latest design will be built by the Chapman-Stein Furnace Co., Mt. Vernon, O. for installation at the Leechburg, Pa. works of the West Leechburg Steel Co. It is to have a normal capacity of 15 net tons of billets an hour when heated from cold to rolling temperature. Material 20 feet long and ranging from 1¾ inches to 3¾ inches square will be handled. The furnace will be a side charge, side discharge type with a solid hearth, and will be built with a suspended roof. No water-cooled parts will be used. The recuperator is to be built with Chapman-Stein type tile which is kept within 1/64-inch of the dimension specified. The recuperator and furnace will operate without a fan.

Wire

Specifications Active and Prices Firm—Rumor of Advance Not Seriously Held

USERS of wire and nails are specifying actively and inquiry for fourth quarter is coming out in anticipation of opening of books. Rumors of an advance in prices are not regarded seriously on account of the general condition. Stocks of mills and jobbers are low. August buying exceeds July but not August of last year. Prices are steady.

WIRE PRICES, PAGE 588

Chicago, Aug. 31.—Mills expect to open books for fourth quarter requirements for wire and wire products shortly after Labor Day. Fourth quarter inquiry is taking form and promises to grow in the next few weeks. Specifications and buying show no slackening. Buying of woven fencing has been stirred to some extent by the recent announcement of spring terms.

Boston, Aug. 31.—Specifications from wire specialty manufacturers have increased. Maunfacturers of screw machine products are especially busy and are important buyers. Nails are selling in good volume. Plain wire is firm at 2.65c Worcester and 2.875c delivered Boston.

New York. Aug. 31.—Well informed wire makers do not believe the recent talk about advancing present prices will have any immediate culmination. There now are no indications of any advances. However, the present market continues firm at 2.50c base Pittsburgh for wire and 2.65c base Pittsburgh for nails. Demand during August has been better all over the country than in July. The August bookings, however, do not exceed those of August of last year. It is estimated that present operations on wire all over the country are at least 60 per cent of capacity. The nail output is regarded as being still under 50 per cent.

Pittsburgh, Aug. 31.—Some jobbers had been replenishing stocks of wire products, principally nails, and operations had been a shade higher. Specifications against manufacturing lines of wire continues fair. Neither mills nor jobbers have anything approaching normal stocks on hand. Makers still talk of the desirability of higher prices, but in view of the relatively light demand, have taken no action. Wire products are unchanged on the basis of 2.50c for plain wire and 2.65c for wire nails.

Bolts, Nuts, Rivets

Fourth Quarter Prices Come Out Soon —Rivets Continue Weak

NUT AND BOLT PRICES, PAGE 588

Pittsburgh, Aug. 31.—Fourth quarter prices on nuts and bolts probably will be announced within the next 10 days, with prospects for continuation of present levels unless mills advance soft steel bars. Bolt and nut orders for August were the heaviest for any month in several years. Few holdups are reported and most contract material is being specified out. Small rivets are a shade weaker and 70, 10 and 5 off can be done on quantities. Structural rivets are unchanged at 2.50c to 2.60c, Pittsburgh.

Philadelphia, Aug. 31.—August demand for bolts, nuts and rivets was under July. Preparations now are under way for renewing bolt contracts for fourth quarter. No indication of price change is seen. Rivets reflect some weakness, with the usual range 2.50c to 2.60c Pittsburgh, but with some sales at 2.40c.

Cleveland, Aug. 31.—Bolt and nut demand continues strong at about the level of recent weeks. Quotations are firm an the basis of 50, 10 and 10 per cent off list for large machine bolts. Rivet business is holding up well for this season of the year although August orders were somewhat under those for July. Occasional shading of the 2.60c, base Pittsburgh, price is reported, although most sellers are holding firmly at this figure.

Producers here have followed western manufacturers with an advance on stove bolts to 80 and 10 per cent off list plus an extra 2½ per cent for bulk. The former price was 80, 10 and 5 off.

Chicago, Aug. 31.—Little deviation is shown in the bolt and nut market from the fairly healthy state of the past few weeks. Prices are holding firmly on bolts and nuts. Large rivets are weaker, but the quotable price still is 2.60c to 2.75c, base, Chicago.

Western makers have advanced, effective Sept. 1, prices on stove bolts to 80 and 10 off, plus 2½ off in bulk. The quotation formerly was 80, 10 and 5 off plus 2½ off in bulk.

Strip Steel

Buying for Fourth Quarter Increasing—Cold-Rolled Is Shaded

STRIP PRICES, PAGE 588

Pittsburgh, Aug. 31.—Fourth quarter inquiry in cold-rolled strip steel has been increasingly heavier and some contracting has been done, it is understood, on a basis of about 3.60c, Pittsburgh. Automobile makers continue to take most of the tonnage. Pittsburgh district makers are operating at an average of 75 per cent. Nothing is now in sight to forecast September on a lower basis than August. Hot-rolled strip is unchanged at 2.30c to 2.50c.

New York, Aug. 31.—Hot-rolled strip steel continues firm at 2.30c and 2.50c base Pittsburgh, depending on width. No exceptions to these prices have been noted and demand is good. On cold-rolled strip competition continues to bring even lower prices. The usual range of prices is 3.50 to 3.60c base Pittsburgh, but considerably lower has been done. In fact the full range of prices now is 3.25c to 3.60c base Pittsburgh.

Cleveland, Aug. 31.—Hot rolled strip demand has increased perceptibly during the past week, specifications being heavier but not much more numerous. New business is confined to small lots. Automotive buying in this district is normal, with few users taking more than fill-in lots. One maker is booked ahead six weeks on narrow gage which is firm at 2.50c, Pittsburgh. Wide strip is steady at 2.30c. Cold finished strip prices generally hold at 3.60c Pittsburgh, with some makers attempting to make 3.75c the minimum but large lots go as low as 3.50c.

Chicago, Aug. 31.—Demand from automotive interests continues active for hot-rolled strip steel. The price is firm at 2.50c to 2.60c.

Cold Finished Steel

Shipments Exceed July with Operations Steadily Held

Pittsburgh, Aug. 31.—Shipments of cold finished steel bars for August exceeded July and last August. This resulted chiefly from heavy specifications against third quarter contracts and a moderate but steady inflow of fill-in business. Operations of cold finishers in this district still range from 80 to 85 per cent and most tonnage is going directly or indirectly into automotive lines. Cold finishers have not yet received substantial inquiry for fourth quarter. Prices are 2.50c, Pittsburgh, with small lots commanding up to 2.75c.

Austrian Steel Improves

Washington, Aug. 31.—Unfilled orders of the Alpine Mining Co., the leading Austrian producer of iron and steel products, were 27,000 tons at the end of July, compared with 50,000 tons at the end of June, according to a cable to the department of commerce from Commercial Attache Groves, at Vienna. Pig iron production of the company was 23,000 tons during July and steel ingots 28,000 tons.

Higher Austrian iron and steel duties, price reductions for export manufacturers and an increase in prices for domestic consumption have now become effective, the cable states.

Nonferrous Metals

Strong Recovery Registered in Metal Markets as August Ends—New Buying Light But Shipments Are Large

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Aug. 25	14.35	14.50	13.92½	65.37½	8.87½	8.65	7.35	27.00	15.62½	35.00
Aug. 26	14.30	14.45	13.85	65.50	8.87½	8.65	7.40	27.00	15.37½	35.00
Aug. 27	14.35	14.50	13.87½	65.75	8.90	8.62½	7.42½	27.00	15.00	35.00
Aug. 30	14.37½	14.50	13.87½	66.12½	8.90	8.65	7.45	27.00	15.25	35.00
Aug. 31	14.37½	14.50	13.87½	66.00	8.90	8.65	7.45	27.00	15.25	35.00

NEW YORK, Aug. 31.—A sagging market prevailed in the nonferrous metals through much of August but just before the end of the month there was a strong recovery. However, not much new buying was done. Shipments and mill operations remain large, especially for this season.

Copper—The price now is 14.37½c Connecticut but buying is light. Users are well covered for a month ahead and producers well booked. Some shading of brass and copper products prices is being done but base prices are unchanged since Aug. 30.

Zinc—The market on prime western gradually has been growing stronger, with the aid of only moderate buying. However, it has been apparent that business conditions were in favor of strength, and the market abroad also has been a little stronger though not actually buying common metal here. Shipments are of good size. Fluctuations have been small.

Lead—Strength in London has been aiding the domestic lead market the past few days and prices have been holding steady at 8.90c New York and 8.65c East St. Louis. The upturn in London has been more than had been expected and as a consequence shading in the New York market has disappeared. Supplies, however, are understood to be a little freer. The American Smelting & Refining Co. is holding to its contract price of 8.90c New York.

Tin—Characteristic of the tin market lately has been the easiness of futures both here and in Singapore despite the fact that the market in London has been tending upward. Ninety-nine per cent metal now is fully two cents under Straits. An important factor in the tin situation is the condition of mining equipment in the Federated Malay States. So far this year production has been hindered a little by changes but as this work is about completed production in the last half of the year may be larger. Deliveries of tin in August were light due chiefly, it is said, to light arrivals.

Antimony—The domestic price of antimony is two cents under the Chinese asking price and consequently a sharp upturn in price is expected in event of a few sales.

Nickel—Prices hold unchanged on nickel with the market steady.

West Michigan Steel Foundry Co., Muskegon, Mich., has increased it capital from $600,000 to $800,000.

Car Installations Drop

Washington, Aug. 31.—Class 1 railroads in July installed in service 12,676 freight cars which brought to 66,258 the total number installed during the first seven months this year, according to reports filed with the American Railway association.

Cars installed during July included 3973 box, 6170 coal and 1822 refrigerator cars.

The total for 1926 was 27,611 cars less than those installed during the same period last year and 22,542 cars below that period in 1924. Class 1 railroads on Aug. 1 this year had 39,102 cars on order compared with 26,813 cars on Aug. 1 last year.

Reports also showed 171 locomotives installed during the month of July, and in the first seven months 1288 compared with 1066 during the same period of 1925. Locomotives on order on Aug. 1 numbered 517 compared with 250 last year.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.37½
Copper, hot rolled	23.00
Zinc, (100-pound base)	11.75
Lead full sheets (cut ¼c more)	12.50 to 13.00
Aluminum, bright flat, up to 10 gage	36.50
SEAMLESS TUBES	
High brass	24.25
Copper	25.00
RODS	
High brass (round ⅝ to 2½-inch)	17.12½
Naval brass	19.87½
WIRE	
Copper, small lots	16.50
High brass	19.87½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	8.75 to 9.00
Chicago	9.00 to 9.25
Cleveland	9.25 to 9.75
HEAVY YELLOW BRASS	
Chicago	7.75 to 8.00
Cleveland	7.50 to 7.75
ZINC	
New York	4.25
Cleveland	4.75 to 5.00
HEAVY COPPER AND WIRE	
New York	11.75 to 12.00
Chicago	10.75 to 11.50
Cleveland	11.25 to 11.75
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.50 to 7.75
LIGHT COPPER	
New York	9.50 to 9.75
Chicago	9.50 to 9.75
Cleveland	10.00 to 10.25
LIGHT BRASS	
Chicago	7.25
Cleveland	6.50 to 6.75
ALUMINUM	
Clippings	21.00 to 21.50
Borings, Cleveland	14.00
Cast	17.00 to 18.00

Secondary Metals

Remelt aluminum No. 12	22.50 to 23.00
Brass ingot, 85-5-5-5	12.25 to 12.50

Coke By-Products

Sulphate of Ammonia Advanced— Distillates Strong—Demand Active

New York, Aug. 31.—Sulphate of ammonia has been advanced 5 cents to a range of $2.45 to $2.50, delivered, for domestic business and $2.45 to $2.50, port, for export. Current business is spotty; however, shipments against recent seasonal contracts are sufficient to absorb the bulk of production.

Distillates remain strong, with prices firm and material going into consumption as fast as produced. Pure and 90 per cent benzol are quoted at 25 cents per gallon at producers' plants in tank car lots, and 30 cents in drums; toluol and solvent naphtha at 35 cents, works, in tanks and 40 cents in drums, and commercial xylol at 36 cents, works, in tanks and 41 cents in drums.

Demand for naphthalene is spotty, with flakes holding at 6½ to 7 cents, works and balls 7½ to 8 cents.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.25	.....
90 per cent benzol	0.25	.....
Toluol	0.35	.....
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22

Per Pound at Producers' Plants

Naphthalene flakes	0.06½ to 0.07
Naphthalene balls	0.07½ to 0.08

Per 100 Pounds Delivered

Sulphate of ammonia	2.47½

Warehouse

August Totals Compare Favorably With July—Demand Above Seasonal Level in Some Districts—Prices Show Firmness

CONTINUED heavy demands for prompt deliveries of iron and steel products maintains warehouse activity above the seasonal level in some districts. August business generally exceeded the same month of 1925 and compared favorably with July. Prices hold firm.

August in iron and steel warehouse circles at Chicago will prove but slightly better than July, it appears, but 10 to 15 per cent over August, 1925. Thus far 1926 has proved fully 15 per cent over the corresponding period last year.

Detroit demand for iron and steel warehouse products continues strong. August business showed a considerable margin over June and July. Further increases are expected for September.

Jobbers in the New York metropolitan district assert that business in August compared favorably with that in July. The past week has shown a spurt with structurals still the most active item on the list. Revision in the base of black and galvanized sheets, as announced by a leading maker earlier in the week, is expected to be reflected shortly.

Demand for iron and steel at Buffalo has held up well for the past week. New activity has made reinforcing bars one of the market leaders. Other materials are moving in usual proportions.

Pittsburgh district warehouses are experiencing a slight increase in demand for sheets, in keeping with a similar tendency in the mill market. Roofing sheets are in especially good demand. One Pittsburgh warehouse has been adding more individual customers than at any time in its history.

St. Louis warehouse business continues active, and the feature of the present activity is the heavy sales for micellaneous uses. Improvements and replacement work of municipalities and public utilities is calling for heavy tonnages.

August sales by Cleveland warehouses will equal or better July in most cases. One jobber reports sales volume of the past month the best in a long time. Prices are holding firm with few cases of shading except on large and attractive orders. Buying of sheets has picked up noticeably in the past week, especially from building trades.

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.15c
Ft. Worth	3.90c
Los Angeles	3.20c
New York	3.24c
Philadelphia	3.00c to 3.20c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.80c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
Ft. Worth	3.90c
New York	3.24c
Philadelphia	3.00c to 3.20c
St. Louis	3.15c
Tulsa	3.80c

REINFORCING BARS

Boston	3.00c to 3.265c
Buffalo	3.30c
Chicago, billet	2.40c to 2.60c
Chicago rail steel	1.90c to 2.00c
Cincinnati	3.20c to 3.30c
Cleveland	2.50c to 3.00c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles, C.L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	3.15c
Philadelphia	3.15c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.25c
St. Louis	3.15c
Tulsa	3.80c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.25c
Ft. Worth	4.50c
Los Angeles	3.20c
New York	3.34c
Philadelphia	2.70c to 3.00c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.80c to 4.16c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.00c
Cleveland, 3/16-inch	3.225c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Ft. Worth	4.50c
Los Angeles	3.20c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.70c to 3.00c
Philadelphia, 3/16-inch	2.90c to 3.20c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.80c

NO. 10 BLUE ANNEALED SHEETS

Boston 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.15c
Detroit	3.65c
Los Angeles	3.75c
New York	3.89c
Portland	4.25c
Philadelphia	3.40c
San Francisco	3.90c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.05c to 4.20c

NO 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.45c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	3.85c
Detroit	4.25c
Ft. Worth	5.50c
Los Angeles	4.75c
New York	4.25c to 4.50c
Philadelphia	4.35c
Portland	5.25c
San Francisco	4.90c
Seattle	5.25c
St. Louis	4.60c
St. Paul	4.35c
Tulsa	5.00c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.60c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.00c
Detroit	5.50c
Ft. Worth	6.00c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.25c to 5.50c
Philadelphia	5.55c
Portland	6.25c
San Francisco	6.00c
Seattle	6.25c
St. Louis	5.70c
St. Paul	5.60c
Tulsa	6.00c to 6.31c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.80c
Ft. Worth	4.65c
Los Angeles	4.05c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.65c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.90c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	
San Francisco	4.25c*	
Seattle	5.00c*	
St. Paul	3.85c	
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, 0.100 inch, 500 lbs. lots	6.15 to 6.30c
Buffalo	6.25c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 lb. lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York duty paid

Swedish, hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE

Discounts from warehouse, New York City Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—28	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—49	—32
2½ to 6-inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—1	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 6
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 8	+16

Coast Outlook Is Good

Some Foreign Material Arriving and Sales of Domestic Goods Are Gaining—Prices Are Firm

SAN FRANCISCO, Aug. 28.—(*By Air Mail*)—General business conditions on the Pacific Coast are good and the outlook for the remainder of the year, as regards steel bookings, is encouraging. Interest this week centers in the announcement of the leading interest and several of the larger independents of the adoption of new base prices on galvanized and black sheets. In the future No. 24 gage, instead of No. 28 gage, will be considered base and new differentials and extras will apply on heavier and lighter gages. Prices, on the whole, are firmer and indications point to higher levels in the near future.

Pig Iron and Coke

With the exception of an inquiry for 400 tons of foundry coke by the Southern Pacific Co. sales and inquiry for coke and pig iron have been confined to relatively small lots for prompt shipment. During the past week 4500 tons of German coke has arrived in port, some of it destined for Los Angeles. Other imports included 250 tons of India iron and about 100 tons of special analysis Swedish iron, commanding a high price. Foundry activity has shown little improvement during the past thirty days and demand for foundry supplies and material continues light.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah Foundry	25.00 to 26.00
*English (2.75 to 3.25 sil.)	25.00
*German	24.25
*Belgian	22.00
*Indian	25.00
*Dutch	22.00

*C.i.f. duty paid.

Bars, Plates and Shapes

During the past week approximately 800 tons of foreign mild steel bars and angles arrived in port. Prices on foreign material have stiffened and 1.90c c.i.f. duty paid is now considered the general quotation. Up until recently 1.80c has represented the general price. Concrete bar awards this week totaled over 400 tons and included 200 tons for the Scottish Rite temple in Oakland, secured by a San Francisco jobber and 154 tons for highway work for the State of California in San Diego county, placed with an unnamed interest. Pending business is of fair proportions. Out-of-stock prices continue decidedly weak and as low as 2.20c was quoted this week on carload lots. Up until recently the minimum price on lots of 250 tons or over was 2.80c. In less than carload lots the price ranges from 2.80c to 3.00c. The Columbia Steel Corp. secured 700 tons of black sheets from the Kittle Mfg. Co. for the 1927 license plate contract of the State of California.

Demand for cold rolled material is by no means heavy and most orders involve small lots. Prices are firm at 2.50c base Pittsburgh or equivalent as a minimum.

Little of interest has developed of late in the plate market. Despite the fact that few large lots have come up for figures recently, the price of plates has stiffened and 2.30c c.i.f. now represents the bottom of the market. It is thought, by those in close touch with conditions, that prices on the Pacific Coast will shortly reflect the advances recently put into effect in the eastern markets. Awards this week included only one lot of over 100 tons. This called for 250 tons for a pipe line project in Colombia, South America, and was booked by the Pacific Coast Engineering Co. of Oakland. Pending business totals over 13,000 tons. New inquiries of the week include 700 tons for a pipe line at San Diego for the Southern California Edison Co. and 100 tons for small tanks for the Shell Oil Co. to be erected at Martinez, Calif.

Awards of structural steel shapes this week aggregated over 1800 tons. The Pacific Coast Steel Co. booked 1000 tons for transmission towers for the Great Western Power Co., the Pacific Coast Engineering Co. took 500 tons for the Mission Junior high school. San Francisco, and the Palm Iron Works secured 250 tons for a plant for the American Can Co. in Sacramento. Pending business calls for over 12,000 tons. New inquiries involve 200 tons for buildings at Davis, Calif., for the University of California and 180 tons for a hospital in San Francisco. Prices are firm at 2.35c c.i.f. as a minimum.

Other Finished Material

Only one award of cast iron pipe was reported this week. The United States Cast Iron Pipe & Foundry Co. booked 111 tons of 48-inch pipe for Los Angeles. Bids were opened this week on 131 tons for San Diego but no award has yet been made. New inquiries include 418 tons for San Bernardino. Total pending business is in excess of 1900 tons. The Pacific Gas & Electric Co. has taken no action yet on its inquiry for 638 tons. The Hillsboro Pipe & Investment Co. secured 290 tons of 2 to 10-inch pipe, 22 miles, for the Wenatchee, Wash., domestic water association. Most producers of tubular goods have reduced their c.i.f. price by $1 to correspond with the recent reduction made in water freight rates of $1 a ton.

James Motor Valve Co., Detroit, has changed its capitalization from $150,000 to 3000 shares no par value and $150,000.

Bar Iron Mill Wages Are Unchanged

Bar iron mill workers' wages will remain unchanged for September and October, the average sales price of bar iron in July and August having been 2.00c, the same as since last November and December. The puddling rate continues $11.38 per ton. The average of sales prices for the preceding two months was determined at a meeting of representatives of the Western Bar Iron association and the Amalgamated Association of Iron, Steel and Tin Workers last week. Following is a comparison of price averages since 1921:

	1926	1925	1924	1923	1922
Jan.-Feb.	2.00c	2.00c	2.35c	2.25c	1.60c
Mar.-April	2.00c	2.05c	2.35c	2.35c	1.50c
May-June	2.00c	2.05c	2.25c	2.50c	1.60c
July-Aug.	2.00c	1.95c	2.15c	2.50c	1.70c
Sept.-Oct.	.....	1.95c	2.10c	3.40c	1.95c
Nov.-Dec.	.....	1.95c	2.05c	2.35c	2.20c
Yearly av.	.....	1.99c	2.21c	2.30c	1.76c

New Orleans Rate Boost Granted; Texas Canceled

Washington, Aug. 31.—The interstate commerce commission has approved proposed increased rates on imported iron and steel articles, in carloads, from New Orleans and other gulf ports, excluding Texas gulf ports to St. Louis, and restriction to lines east of the Mississippi river, and proposed increased rates on those articles from New Orleans to Little Rock and Pine Bluff, Ark.

The commission did not find justified the proposed increased rates on iron and steel articles, imported, from Texas gulf ports to St. Louis, points in Oklahoma and Kansas, and Little Rock and Pine Bluff, Ark., and proposed restriction of import class rates so that fifth class rates will not apply on iron and steel articles from those points to destinations involved.

The commission has ordered the suspended schedules canceled and reasonable rates have been prescribed for the future.

Japan May Raise Tariff

Washington, Aug. 31.—Further tariff increases on imports of steel products into Japan are under consideration, according to a cable to the department of commerce from Commercial Attache C. E. Herring, Tokyo. The present duties were imposed by the customs tariff law which passed the diet and took effect March 29, 1926.

Tool Builders

Will Hold First Annual Exposition in Cleveland in 1927

An exposition of machine tools sponsored by the National Machine Tool Builders' association will be held at Public Hall, Cleveland, Sept. 19 to 24, 1927. This exhibition will be the first of an annual series and is to be open to displays by companies which are members of the association and by any reputable company or individual, manufacturing machine tools, or machinery, equipment, supplies, accessories, materials, services or other articles, methods or processes essential or incidental to the industrial utilization of modern machine tools.

The exposition is constructively to further sound distribution economics in behalf of the machine tool industry, and the convenience of the many machine tool using industries. In elaboration of these motives for and objects of the exposition, the association points out:

"The machine tool industry is among those to which an actual exposition of products is necessary for effective distribution. There has been no coherent, effective presentation of their products, to identifiable users, by the machine tool makers as an industry.

"As a result machine tools are displayed and demonstrated to sundry sections of the industrial public, and even to sections of the general public, in various and numerous regularly or intermittently scheduled expositions. In these expositions they are grouped either with miscellaneous equipment or with displays primarily of a specialized technological character not always directly related to machine tool technique or utilization. It has become obvious to builders of machine tools that there must be centralization and simplification of their exposition effort and outlay.

"This situation need now leads the National Machine Tool Builders' association, after careful investigation and preparation, to announce for 1927 the first of the industry's own shows.

"The primary purposes of the exposition are the elimination of waste involved in the scattering of exposition energy and expense—the providing for 1927 and succeeding years of the industry's own agency geared to a clear-cut business purpose—the making more effective, while less dispersed and costly, of the necessary annual visual presentation of machine tool progress and possibilities to machine tool buyers, actual and potential. It is to be a centralized, single-goaled, sound and necessary medium for the industry's joint and necessary distributive effort."

A basic feature of the exposition, according to the association's announcement, will be the absolute exclusion of all persons not having a reasonably direct interest in machine tools and their accessories. Admission therefore will be registration only.

"There will be not ticket distribution, no entrance fee, no crowds of mere sight-seers," the association announces. "By commercial, industrial or technical registration-identification only, an interested person may obtain admission. He will wear a badge identifying him by name and by company or other affiliation, to the exhibitor.

"The exposition will be a buyer's, a user's, a specifier's, an honest investigator's show. Booth attendants will have opportunity to talk at length with prospects. The association can now assure this selective attendance in numbers widely representative of the continent's machine tool users. The exposition will be a concentration for the serious purpose of inspection and buying, of machine tool users."

The success and representative scope of the exposition already is assured, according to the association, by the number of machine tool building companies which have specified the amounts of display area each will require. The association's prospectus lists more than 50 of these companies.

The perfecting of plans is in charge of a committee on exposition comprising: Chairman: J. Wallace Carrel, vice president, Lodge & Shipley Machine Tool Co., Cincinnati; O. B. Iles, president, International Machine Tool Co., Indianapolis; P. E. Bliss, vice president, Warner & Swasey Co., Cleveland; H. W. Dunbar, assistant general sales manager, Norton Co., Worcester, Mass.; and E. J. Kearney, secretary, Kearney & Trecker Corp., Milwaukee. Exposition activities are being conducted from Room 635, 1328 Broadway, New York.

Pig Iron Market Quiet

(*Concluded from Page* 589)

chased 1000 tons of northern foundry for last quarter delivery. The Anderson Stove Co., Anderson, Ind., is reported to have purchased 300 to 500 tons of the same grade. Northern iron generally is quoted at $20 Ironton, while southern iron is firm at $21, Birmingham.

St. Louis, Aug. 31.—The last half of August developed little pig iron business in this district. The outstanding feature is the general anxiety of all users to get in promptly their quotas due on contracts. In a number of instances there has been anticipations of tonnages about two weeks ahead. The leading local producer reports August shipments the heaviest on record for that month. August shipments of one Birmingham maker into this district exceeded all previous August records. Shipments from Chicago have been large. One east side melter is asking for prices on 1000 to 2000 tons of malleable, and another is inquiring for 2000 tons of malleable, for fourth quarter. Prices are steady.

Birmingham, Ala., Aug. 30.—Southern No. 2 foundry iron still is held firm at $21. Sales are small. Inquiries are numerous but there is a disposition to wait with fourth quarter purchases. The Sloss-Sheffield Steel & Iron Co. will reline and repair its No. 4 furnace, another stack recently repaired now being back in operation. Surplus iron in Alabama will show but little increase for the month, no No. 2 foundry iron having been added to piles on furnace yards.

Philadelphia, Aug. 31.—Basic pig iron sales in this district in the past week aggregated 15,000 to 18,000 tons. This business was accompanied by a slight price recession and basic now is around $20.75 delivered, eastern Pennsylvania. Low phosphorus iron sales aggregated 3000 to 4000 tons, half of which is copper free and the remainder copper bearing. Prices are unchanged. Foundry iron sales are quiet, the market is $21 base, eastern Pennsylvania furnace.

Steel Furniture Orders Decrease in July

Washington, Aug. 31.—Orders for steel furniture in the business group were valued at $2,283,666 in July compared with $2,556,631 in June and $2,105,133 in July 1925, according to returns by 33 manufacturers to the department of commerce. Shipments in July totaled $2,149,498, a drop from $2,605,502 in June. Unfilled orders at the end of July amounted to $1,665,222, a gain over $1,535,166 in June. Shelving orders and shipments dropped in June, but unfilled orders gained. Further comparisons follow:

BUSINESS GROUP

1925	Orders received	Shipments	Unfilled Orders
July	1,823,435	1,810,754	1,445,897
Total (7 mos.)	$15,422,942	$15,279,698	$10,519,420
August	1,664,649	1,688,965	1,358,386
September	1,969,769	1,816,484	1,535,231
October	2,170,076	2,130,498	1,406,117
November	1,975,117	1,885,505	1,496,242
December	2,454,277	2,418,577	1,531,505
1926			
January	3,063,833	2,859,393	1,927,777
February	2,662,095	2,598,713	1,975,884
March	2,687,268	2,843,869	1,804,059
April	2,936,884	2,782,167	1,783,734
May	2,464,457	2,575,561	1,588,788
June	2,556,631	2,605,502	1,535,166
July	2,283,666	2,149,498	1,665,222
Total (7 mos.)	$18,654,834	$18,414,703	$12,280,630

SHELVING

1925			
July	510,815	482,187	398,973
Total (7 mos.)	$3,770,174	$3,697,194	$2,897,466
August	516,694	452,716	447,255
September	624,676	542,173	511,689
October	730,911	622,471	626,933
November	686,814	574,905	739,831
December	620,947	788,461	570,941
1926			
January	582,016	578,161	584,824
February	656,367	603,501	633,935
March	583,701	726,413	604,991
April	704,432	699,370	570,693
May	580,995	617,260	587,310
June	606,698	601,913	553,660
July	604,271	531,361	602,134
Total (7 mos.)	$4,318,480	$4,357,979	$4,137,547

Koppers Seaboard Coke Co., New York has increased capital from $600,000 to $1,000,000.

August Pig Iron Loss Small

Estimated Production Indicates a Total of 3,188,579 Gross Tons and an Average Daily Rate of 102,857 Tons—Active Blast Furnaces Drop from 217 to 215 on Aug. 31

PRODUCTION of coke pig iron for August, as compiled from estimates telegraphed by blast furnace operators, showed that the recession in operations begun last May have not yet come to a halt. On the other hand, the decline of August was the smallest of any of the last four months, indicating that the turning point is close at hand, probably in September. This is suggested both by pig iron tonnage and furnace activities.

Iron made in August totaled 3,188,579 gross tons, which compared with the 3,224,663 tons of July, was a loss of 36,084 tons. Both months had 31 days. Average daily output in August was 102,857 tons, against 104,021 tons per day in the preceding month, the drop being 1164 tons, or 1.1 per cent. The August production was the best August since 1923 when the rate was 111,254 tons per day. It was also exceeded by August in the years 1916, 1917 and 1918. As against August, 1925, August of this year shows a gain of 15,529 tons per day, or 17.8 per cent.

On the last day of the month, 215 of the country's serviceable blast furnaces were producing pig iron. This represented an activity of 57.8 per cent. On July 31, the number of operating furnaces totaled 217 and represented 58.4 per cent. Of the merchant class, 4 furnaces were blown in and 3 were blown out or banked. Of the nonmerchant or steelworks class, 2 were blown in and 5 blown out, the net loss being 3 stacks. Reports which are received from furnace operators indicate that several stacks are to resume operations early in September.

Ferromanganese made in August amounted to 23,878 tons, as compared with 26,873 tons in July, the loss being 2995 tons. Spiegeleisen, however, with 4350 tons was an increase of 651 tons over the 3699 tons of a month ago.

Stacks blown in during August were: In Ohio Dover, M. A. Hanna Co. In Pennsylvania: One Lucy, Carnegie Steel Co.; one Eliza, Jones & Laughlin Steel Corp. In New York: Buffalo B, M. A. Hanna Co.; Genesee, McKinney Steel Co. In Alabama: North Birmingham, No. 4, Sloss-Sheffield Steel & Iron Co.

Stacks blown out during the month were: n Ohio Central B, American Steel & Wire Co. In Pennsylvania: One Isabella, Carnegie Steel Co.; Bethlehem D, Bethlehem Steel Co. In New York: Donner No. 2, Donner Steel Co. In Alabama: North Birmingham No. 3, Sloss-Sheffield Steel & Iron Co.; Alabama City, Gulf States Steel Co. In Indiana :Gary No. 9, Illinois Steel Co. In Wisconsin: Mayville B, Illinois Steel Co.

MONTHLY PRODUCTION

	1926	1925	1924
January	3,319,789	3,372,207	3,015,489
February	2,923,850	3,214,067	3,073,619
March	3,458,171	3,571,422	3,465,389
April	3,438,805	3,211,235	3,226,107
May	3,477,820	2,933,907	2,619,986
June	3,232,478	2,679,045	2,022,836
Total 1st half	19,850,913	18,981,883	17,423,417
July	3,224,663	2,665,262	1,783,457
August	3,188,579	2,707,171	1,882,986
September	.....	2,725,885	2,053,617
October	.....	3,017,889	2,461,727
November	.....	3,023,257	2,154,979
December	.....	3,249,057	2,956,389
Total 2nd half	.....	17,388,521	13,653,155
Grand total	26,264,155	36,370,404	31,076,572

AVERAGE DAILY PRODUCTION

	1926	1925	1924	1923	1922
Jan.	107,089	108,781	97,273	104,136	53,090
Feb.	104,423	114,788	105,987	106,925	58,220
Mar.	111,554	115,207	111,787	113,664	65,674
Apr.	114,627	107,041	107,587	118,210	69,005
May	112,187	94,642	84,515	124,790	74,495
June	107,749	89,301	67,427	122,262	78,748
July	104,021	85,976	57,531	118,860	77,517
Aug.	102,857	87,328	60,741	111,254	58,408
Sept.	.....	90,862	68,454	103,917	67,466
Oct.	.....	97,351	79,419	101,375	84,827
Nov.	.....	100,775	83,832	96,373	94,870
Dec.	.....	104,808	95,367	93,952	99,468
Ave.	108,082	99,645	84,908	109,659	73,563

Active Blast Furnaces

	In blast	Total	Per Cent
August	215	372	57.8
July	217	372	58.4
June	220	372	59.1
May	229	376	60.9
April	237	376	63.0
March	235	377	62.4

AUGUST PIG IRON

	No. of stacks	No. in blast last day of month Aug.	July	Total gross tons
Ohio	69	50	50	786,392
Pennsylvania	132	74	74	1,054,002
Alabama	34	23	24	238,706
Virginia	17	2	2	7,436
New York	26	16	15	196,269
New Jersey	3	0	0	.....
Illinois	25	16	16	317,894
Colorado	5	2	2	439,387
Indiana	18	15	16	
Maryland	6	5	5	
Wisconsin	5	2	3	
Kentucky	5	1	1	58,308
Tennessee	13	1	1	
Utah	1	1	1	
West Virginia	4	2	2	
Michigan	4	3	3	61,957
Minnesota	3	2	2	
Missouri	1	0	0	
Texas	1	0	0	
Spiegel and ferro—all states	—	—	—	28,228
Totals	372	215	217	3,188,579

Simplification Reports Being Prepared

Washington, Aug. 31.—Officials of the simplified practice division, department of commerce, report that replies to the steel reinforcing bar questionnaire mailed to users and the mills, are being received at a satisfactory rate. The replies will serve as a basis for a report by the chairman of the standardization committee, which was appointed by the industry following the preliminary conference held here Jan. 26.

Simplified practice recommendation No. 58, covering iron and steel scrap, is being prepared for publication in the "Elimination of Waste" series of the department of commerce. Recommendation No. 53, for steel reinforcing spirals also is being prepared for final publication. Recommendation No. 57 dealing with wrought iron and steel pipe will be published later this fall.

Central Alloy Balance Sheet Reported

The preliminary consolidated balance sheet of Central Alloy Steel Corp. (consolidating the assets and liabilities of the Central Steel Co., the Central Furnace Co. and the United Alloy Steel Corp. as of June 30, 1926, showed current assets of $31,757,552 and current liabilities of $6,063,058 leaving net working capital of $25,694,497. Assets are as follows:—Fixed, $41,926,861; cash $9,081,515; marketable securities $291,480; accounts and bills receivable $7,209,220; inventories $15,175,338; investments $308,453; other assets $1,380,429; deferred charges $516,103; total $76,411,398. Liabilities include—preferred stock $9,489,300; common stock $53,542,475; current liabilities $6,063,059; total $76,411,398.

Study New Sheet Differentials

More Independent Mills Likely To Change Base from 28 to 24 Gage, on Black and Galvanized—Corporation Awaits Results—Reflects Changed Character of Demand—Benefits Labor

ONE of the most important revisions in sheet steel trade practice in many years has been announced by the Youngstown Sheet & Tube Co., effective Sept. 1. As referred to in last week's issue of IRON TRADE REVIEW, it provides that prices for black and galvanized sheets of various gages shall be figured from a new base of No. 24 gage instead of No. 28 as formerly. A new schedule of price differentials based upon divergence of the thinner and thicker gages from base also has been promulgated. The base and gage differentials that have applied on blue annealed sheets for years remain unchanged.

Following the announcement by the Youngstown company, a number of other important independent sheetmakers in northern and eastern Ohio and western Pennsylvania have intimated they plan to accept the new base and differential schedules, these including Trumbull Steel Co., Republic Iron & Steel Co., Thomas Sheet Steel Co., Waddell Steel Co., Mansfield Sheet & Tin Plate Co., Mahoning Valley Steel Co. and others. The general expectation in the trade is that the American Sheet & Tin Plate Co., subsidiary of the United States Steel Corp., will observe the success of this effort for several weeks and may then decide to adopt the new schedules.

Two factors appear to be involved. One is the steady growth in demand from automotive interests for heavier gages of sheets, and the other has been the broadening demand for the lighter or thinner gages of sheets. An outstanding instance is the insistence of Japanese buyers for the lighter gages.

It is the belief of the projectors of the plan that mills and consumers will obtain a more even "break." Producers claim they have made very little if any profit on rolling some of the thin gages under the old schedule. Customers at times have found it difficult to obtain requirements from regular sources of supply, the latter being busy rolling other gages. Under the new schedules, mills will be enabled profitably to supply the customer's choice since the output deficit on the thin gages will be compensated for.

The new plan also will result in workmen being better satisfied to roll the thin gages, since with the change in base their wages under the Amalgamated scale will be advanced slightly. The average sales price figured bi-monthly as the wage base is the average of 26, 27 and 28 gages. That is, when the actual average invoice selling price of plain black sheets in these gages is $2.15 per 100 pounds then the general scale of wages applies. For each 5c increase in the selling price per 100 pounds the wage rate for each member of the crew advances 1½ per cent above scale while for each 5c decline in the selling price down to $1.80 the wage rate for each member of the crew declines 1½ per cent. Lowering the base gage from 28 to 24 represents a $1 a ton advance in the selling prices of 25, 26 and 27 gages and should benefit the workmen.

The change is a reversion to trade practice years ago when wrought iron sheets were produced. No. 24 gage then was base. Between 1885 and 1890 the base was moved up first to No. 27 gage, and finally settled upon No. 28. That was when most demand upon sheet mills involved gages averaging around No. 28. In the past ten years sheet demand has changed and now the bulk of tonnage is divided between the two extremes of heavier or thicker, and the lighter sheets.

The announcement issued by the Youngstown Sheet & Tube Co. as to the new differentials is as follows:

"Effective Sept. 1, 1926, we shall change our practice in selling black and galvanized sheets. Instead of using the price of No. 28 gage as the base price, we shall hereafter make our price for No. 24 gage our base price. We have adopted this plan because the average gage of all the black and galvanized sheets that we roll is about No. 24 gage. Our differentials for heavier and lighter gages will be shown on the attached card.

"These differentials, you will notice, have been changed from those we formerly used. We have made these changes in order to make our differentials correspond more nearly to the differences in our manufacturing costs for the various gages.

"This change will apply to one pass cold rolled black sheets and galvanized sheets. Our base gage and differentials for blue annealed sheets remain unchanged.

"We have made no changes in our extras for widths and lengths or other miscellaneous extras."

The new schedule of differentials on black and galvanized is as follows:

One Pass Cold Rolled Black Sheets

Gauge	Per 100 Lbs.
30	Add 50c
29	Add 40c
28	Add 25c
27	Add 15c
25-26	Add 10c
24	Base
21-23	Deduct 5c
18-20	Deduct 20c
15-17	Deduct 30c
12-14	Deduct 35c
10-11	Deduct 45c

Galvanized Sheets

Gauge	Per 100 Lbs.
30	Add 90c
29	Add 70c
28	Add 50c
27	Add 35c
25-26	Add 25c
24	Base
21-23	Deduct 15c
19-20	Deduct 20c
18	Deduct 35c
15-17	Deduct 50c
12-14	Deduct 60c
10-11	70c

No new schedules of differentials on

(*Concluded on Page* 627)

Differentials and Prices Are Compared

BLACK

Gage	Old Price	New price	Differential per ton
10	2.80	2.55	$—5
11	2.80	2.55	—5
12	2.80	2.65	—3
13	2.85	2.65	—3
14	2.85	2.65	—3
15	2.90	2.70	—4
16	2.90	2.70	—4
17	2.95	2.70	—5
18	2.95	2.80	—3
19	2.95	2.80	—3
20	2.95	2.80	—3
21	2.95	2.95	none
22	3.00	2.95	—1
23	3.00	2.95	—1
24	3.00	3.00	BASE
25	3.05	3.10	+1
26	3.05	3.10	+1
27	3.10	3.15	+1
28	BASE 3.15	3.25	+2
29	3.25	3.40	+3
30	3.35	3.50	+3
	GALVANIZED		
10	3.30	3.15	—3
11	3.30	3.15	—3
12	3.40	3.25	—3
13	3.40	3.25	—3
14	3.40	3.25	—3
15	3.55	3.35	—4
16	3.55	3.35	—4
17	3.70	3.35	—7
18	3.70	3.50	—4
19	3.70	3.65	—1
20	3.70	3.65	—1
21	3.70	3.75	+1
22	3.85	3.75	—2
23	3.85	3.75	—2
24	3.85	3.85	BASE
25	4.00	4.10	+2
26	4.00	4.10	+2
27	4.15	4.20	+1
28	BASE 4.30	4.35	+1
29	4.55	4.55	none
30	4.85	4.75	—2

Machinery

August Sales Not So Active as in Past Months—Prospects for September Appear Good—Price Advances Noted

FROM all reports August appears the slowest month for machinery sales of any of the recent months. Inquiries have been in good volume but vacation schedules have made closing of business more difficult. In the Chicago territory, the coming steel and machine tool exposition is slowing down sales, buyers preferring to wait until afterwards to make their selection. Illinois Steel Co. is reported in the market for some 40 tools. Price advances are becoming more numerous, indicating that there is considerable readjustment still to be made. The most recent increases affect turret lathes and radial drills and amount to about 10 per cent. In the East, railroad buying continues, although all sales are small. Used tools are in fair demand.

New York, Aug. 31.—While some machine tool sellers report little change from the seasonal slackness prevailing earlier in the month, others report an improvement both in buying and inquiry. They assert there have been no outstanding lists, but an increase in the number of specifications coming through. A feature is a continued readjustment of prices. Certain turret lathe manufacturers have announced an advance of 10 per cent, effective Sept. 1, and a similar increase has been announced by at least one or two radial drill manufacturers. Planers and shapers, it may be recalled, have been advanced during the current season. In some instances shapers have been advanced twice. In all cases the increases have amounted to about 10 per cent.

Railroad activity continues in evidence. New York, New Haven & Hartford is reported to have closed within the past week on several machines. The New York Central, previously noted in the market for substantial lists, has added a 24-inch engine lathe. Delaware & Hudson has asked for figures on four car wheel borers and two nut tappers, for budget purposes. Chicago & North Western has closed on a 90-inch head driving wheel lathe and a 90-inch locomotive journal turning lathe and the Pullman Co. on a 48-inch, 500-ton wheel press and an axle lathe and a car wheel borer. These latter two machines are in addition to those reported last week. This business all went to the Niles-Bement-Pond Co., which has also closed on a 26-inch shaper for a steel shafting company in Pittsburgh and a 14 x 26-foot lathe for a Berkeley, Calif. concern.

Boston, Aug. 31.—Sales of machine tools during August fell below the July record. The last few days, however, have developed new inquiry and somewhat better sales. Sales of used tools are reported much improved by one of the leading dealers at Boston, who estimates that 40 or 50 of such tools have been placed during the past week. Much interest centers in this week's sale of the complete machine tool equipment of the Gray & Davis Corp. plant in Cambridge, Mass. This is a modern extensive plant with a full complement of metalworking tools. New tool sales of the past week were almost all single placements. A Worcester, Mass., manufacturer bought a large drill press. A textile machine manufacturer bought a planer and is in the market for other equipment. New York, New Haven & Hartford railroad is expected to buy 10 or 12 tools during the coming week. The announced price advance covering screw machines has stimulated buying and has brought out considerable new inquiry.

Pittsburgh, Aug. 31.—Machinery dealers do not lack inquiries, but they are experiencing difficulty in closing business on account of the vacation period. This handicap, they believe, will pass within the next two weeks. Three good-sized inquiries for woodworking tools for industrial plants are current. Four individual disk-grinder inquiries are out. Deliveries on most tools are prompt but occasional delays are encountered; one seller is having difficulty making specified deliveries on pipe bending machines. John Simmons Co., Newark, N. J., has purchased from Barrett Machine Tool Co., Meadville, Pa., a 4 to 24-inch pipe flange facing machine. Prices generally are unchanged. Big Four railroad is in the market for a gantry crane for its Cincinnati shops. The Carnegie Steel Co. list of cranes for Houston, Tex., has not yet been closed although speedy action is promised.

Cleveland, Aug. 31.—Equipment buying in Cleveland was considerably better during the past week. Glenn L. Martin Co. closed on nine machines which have been pending for some time, including three milling machines from Brown & Sharpe Mfg. Co.; 6 drills from Allen Machine Co.; an upright drill from Cincinanti Bickford Tool Co.; a gear shaper from Gould & Eberhardt; and a vertical shaper from Pratt & Whitney Co. The Pratt & Whitney company also sold a 6-inch vertical shaper to the Cleveland Wrought Products Co. and a jig borer to Baker Bros., Toledo. Barth Stamping & Machine Co. took a milling machine from the Cincinnati Milling Machine Co. and Harris Automatic Press Co. a miller from another builder. Inquiries continue good, indicating a good September.

Chicago, Aug. 31.—Sales continue desultory with only occasional interests reporting good volume. Most of the dullness in buying is directly attributed to the coming machine tool exposition at the Municipal pier, for buyers are holding up contracts to see what new tools will come out. August undoubtedly will show a sales volume below July, although optimism is high over the following month. Turret lathes are active. Joseph T. Ryerson & Son recently sold a 36-inch shaper to the Chicago, Burlington & Quincy railroad, and some equipment to the Chicago & North Western. Other railroads are silent except the Chicago, Milwaukee & St. Paul. The latter carrier is rumored to be coming into the market again shortly. Considerable interest is being aroused by the recent award of a radial drill to a German tool interest at a delivered figure, at least half the quotation of an American maker. Inquiry is good with a number of jobs pending. Illinois Steel Co. is said to be in the market for some 40 tools, including turret and engine lathes, shapers, planers, grinders and boring mills for the Gary, Ind., works. The list of the Pullman Car & Mfg. Co. still is pending. Crane selling continues dead, especially in heavy equipment lines. Used tools are fairly active.

CRANE ORDERS PLACED

Thirteen special handpower cranes for Fourteenth street substation of New York Edison Co., New York, to Chisholm-Moore Mfg. Co.; specifications call for one 1-ton, one 2-ton, three 10-ton and eight 5-ton.

Three crawler cranes for Frederick Snare Corp., New York, to Keohing Co.

Two overhead cranes of small capacity for West Virginia Pulp & Paper Co., New York; reported going to Armington Engineering Co.

Two 6-ton handpower cranes for Tidewater Oil Co., New York, to Alfred Box & Co.

Among single orders were: 30-ton electric overhead crane for Bethlehem Mines Corp., Bethlehem, Pa., to Northern Engineering Works; 15-ton electric crane for Stupp Bros. Carondelet, Mo., to Shaw Crane Works; 5-ton trolley for Schiabone & Bonomo Bros., Jersey City, N. J., to Shaw Crane Works; 8-ton handpower crane for L. O. Koven & Bro., Jersey City, N. J.; to New Jersey Foundry & Machine Co.; 1-ton jib crane for Simonds Saw & Steel Co., Lockport, N. Y., to New Jersey Foundry & Machine Co.; 2-ton electric gantry crane for A. B. See Elevator Co., Jersey City, N. J., to New Jersey Foundry & Machine Co.; 10-ton bucket handling crane for New York Steam Co., New York, placed through Thomas E. Murray, engineer, New York, with an unnamed builder; 6-ton electric traveling crane for Heyl & Patterson Inc., Pittsburgh, to Roeper Crane & Hoist Works, Reading, Pa.

CRANE ORDERS PENDING

10-ton locomotive crane for New York Central railroad; pending. This is in addition to 20-ton crane previously noted.

10-ton crawler crane for Palisades Interstate Park commission, New York; bids opened.

Gantry crane for Big Four railroad, shops at Cincinnati; bids being taken.

Sulphuric acid displaced fermented barley water as a pickling agent in the tin plate industry about 1806.

British Coal Supply Increased

Home Production Now 300,000 Tons Weekly, Imports 950,000 Tons; Total Is Half of Requirements—English Firm Takes 21,000-Ton Pipe Order for Brazil—Germans Shipping 7000 Tons of Rails to Boston

2-3 Caxton House, Westminster, S. W.1
European Headquarters,
IRON TRADE REVIEW.

LONDON, Aug. 31.—(*By Radio*)—British coal mine operators are managing to raise 200,000 tons weekly, while the amount of outcrop coal now being mined is about 100,000 tons weekly. Recent negotiations for a general settlement of the strike have failed, but a considerable number of strikers have returned. The amount of coal imported weekly is approximately 950,000 tons, and this with the 300,000 tons being produced in this country, brings the total available to about one-half of that required.

A much more cheerful attitude is apparent in industry. Some blast furnaces are resuming operations with imported coal. Foundries are experiencing difficulties in operating with foreign coke; the coke is said to be of poor quality, and high price. The English firm of Braithwaite & Co. has obtained an order from Sao Paulo, Brazil, for 21,000 tons of water pipe that will be made of special iron under license from the American Rolling Mill Co., Middletown, O.

German mills recently have sold bars to Holland, hoops to the Far East and South America, plates to England and Scandinavia; 2000 tons of sheets to Japan, and 7000 tons of rails have been shipped to Boston. French and Belgian mills report active export demands. Luxemburg interests have obtained large steel orders from Germany. The domestic market in Germany has improved.

German Steel Exports Good but Profits Small

BERLIN, Aug. 24.—(*European Staff Service*)—While the recent break of the franc has not caused the depression of German export business that was expected, because French steelmasters are fully booked for the next few weeks, the hopes of German producers were concentrated on a possible stabilization of the franc, as it was estimated that the termination of French and Belgian competition on the world market would result in a 20 per cent increase of receipts. Nevertheless, the quantities exported and the foreign orders booked during recent weeks have been fair, particularly since Great Britain has been asking for increased quantities of semifinished products and plates owing to closing down of the mills in that country. German exports of iron and steel in June, 423,094 tons, increased by about 5 per cent compared with those of May, 400,645 tons, but continue to lag behind the tonnage recorded in March, 466,364 tons. During the past six months German foreign sales, 2,508,382 tons, have exceeded those of the first half of 1925, 1,638,301 tons, by more than 50 per cent. However, the value of the quantities shipped abroad during the first half of this year exceeded that of the corresponding period of last year by slightly less than 20 per cent, thus reflecting the unprofitable prices obtained in export business.

Of the unfilled orders of the Stahlwerks-Verband 80 per cent is export business and only 20 per cent domestic sales, so that of late the association has avoided bookings.

The situation in the domestic market has considerably improved, as is reflected by the fact that the rate of curtailing of production of raw steel has been cut from 32.50 per cent in July to 30 per cent in August. In June, when the total output of the rolling mills with 855,929 tons lagged only 8 per cent behind the production of June, 1925, the output of semifinished products and railroad material, wire rods and tinplates exceeded that of a year ago. Domestic inquiries have improved as a result of greater activity in the building trade, and it is hoped that the government scheme to reduce unemployment,

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 30	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$21.95	4 10 6*	$16.98	3 10 0	$16.98	3 10 0	$17.46	3 12 0
Basic	21.82	4 10 0	18.79	3 17 6	18.79	3 17 6	16.98	3 10 0
Basic-bessemer	21.22	4 7 6†	15.28	3 3 0	15.28	3 3 0	18.19	3 15 0
Hematite, Phosphorus 0.02-0.05	20.13	4 3 0	21.10	730*	.....	.....	20.61	4 5 0
SEMIFINISHED STEEL								
Billets	$30.31	6 5 0	$22.43	4 12 6	$22.43	4 12 6	$20.61	4 5 0
Wire rods	43.65	9 0 0	26.68	5 10 0	26.68	5 10 0	29.10	6 0 0
FINISHED STEEL								
Standard rails	$36.38	7 10 0	$29.10	6 0 0	$29.10	6 0 0	$29.10	6 0 0
Merchant bars	1.62c	7 10 0	1.08c	5 0 0	1.08c	5 0 0	1.07c	4 18 0
Structural shapes	1.41c	6 10 0	1.06c	4 17 6	1.06c	4 17 6	1.04c	4 15 0
Plates, ship, bridge and tank	1.57c	7 5 0	1.19c	5 10 0	1.19c	5 10 0	1.19c	5 9 0
Sheets, black, 24 gage	2.27c	10 10 0	2.27c	10 10 0	2.27c	10 10 0	2.46c	11 5 0
Sheets, galvanized, 24 gage, corrugated	3.68c	17 0 0	3.64c	2,800*	3.88c	3,100*	3.61c	16 10 0
Bands and strips	2.17c	10 0 0	1.46c	6 15 0	1.46c	6 15 0	1.42c	6 10 0
Plain wire, base	2.11c	9 15 0	1.41c	6 10 0	1.30c	6 0 0	1.51c	6 18 0
Galvanized wire, base	2.76c	12 15 0	2.11c	9 15 0	1.73c	8 0 0	1.97c	9 0 0
Wire nails, base	2.06c	9 10 0	1.89c	8 15 0	1.54c	7 2 6	1.75c	8 0 0
Tin plate, base box 108 pounds	$ 4.97	1 0 6	.....	.....	.....	.....	$ 6.79	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$21.83	4 10 0	$17.34	600(2)	$16.90	610	$19.55	85
Basic pig iron	20.37	4 4 0	17.05	590(1)	16.62	600	20.24	88
Furnace coke	7.28	1 10 0	4.88	169	5.54	200	4.95	21.50
Billets	30.31	6 5 0	22.54	780	23.27	840	27.37	119
Standard rails	1.62c	7 10 0	1.17c	900	1 11c	8 0	1 46c	140
Merchant bars	1.75c	8 0 0	1 30c	1.000	1.12c	805	1 40c	134
Shapes	1.62c	7 10 0	1.24c	950	1.12c	805	1.37c	131
Plates, ship, bridge and tank	1.84c	8 10 0	1.46c	1.125	1.21c	970	1.55c	149
Sheets, black, 24 gage	2 38c	11 0 0	2 44c	1.875	2 25c	1.800	2.14c	205
Sheets, galvanized 24 gage, corrugated	3.68c	17 0 0	3 58c	2 750	3.88c	3.100	3.96c	380
Plain wire	2.11c	9 15 0	1 72c	1.325	1.75c	1.400	1.88c	180
Bands and Strips	2.27c	10 10 0	1.50c	1.150	1.50c	1.200	1.67c	160

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £1 10s 0d ($7.28) f. o. b. Ferromanganese £14 0s 0d ($67.90) f. o. b. German ferromanganese £13 0s 0d ($63.05) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semifinished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg and German are for basic-bessemer steel.

on which 1,000,000,000 marks ($238,000,000) is to be expended, will result in increased occupation of steelworks. The time of delivery of most goods already has been prolonged and some mills have reopened, as, for instance, the sheet rolling mill of the Siegener Iron Works. Prices generally have remained unchanged.

The situation in the pig iron market has not improved, foreign sales having decreased from 38,660 tons in May to 29,980 tons in June, the decrease being chiefly due to reduced shipments to the United States. However, exports during the first half of this year totaled 188,412 tons, against 90,576 tons in the corresponding period of last year, of which 102,022 tons, compared with 47,950 tons, were shipped to the United States, which country this year has again been the best foreign consumer of German pig iron. Domestic inquiries remain limited.

French Ore Production Makes New Record

Paris, Aug. 17.—(*European Staff Service*)—Concurrently with the increase in production of pig iron in France for the first six month of this year the output of iron ore for the first half of 1926 also was the highest since prewar years. Production for the period ending June 30 was 18 834,417 metric tons, corresponding to a monthly average of 3,139,069 tons, against a monthly average of 3,048,185 tons in 1925, an increase of 3.90 per cent. The June output was the highest registered since the war and amounted to 3 342,036 metric tons, compared with 3 024,363 tons in May and 3.331 272 tons which was the previous high mark reached in March. Stocks on June 30 totaled 2,049.022 metric tons. The following table gives figures for the first half of 1926, compared with the monthly averages of the three preceding years in metric tons:

Mon. ave.	Production	Stocks at end of month
1923	1.935,460	
1924	2.416,020	
1925	3,048,185	
1926		
January	3,138,525	2.564,924
February	3,018,235	2,575,108
March	3,331,272	2,471,699
April	2,979,986	2,288,509
May	3,024,363	2,342,278
June	3,342,036	2,049,022

European Steel Treaty Growing Nearer

London, Aug. 17.—(*European Staff Service*)—Contradictory reports have been circulating in connection with negotiations during the past few days in Paris relating to iron and steel agreements.

The situation at the time of writing is as follows. A general provisional commercial agreement has been passed between France and Germany and was signed in Paris Aug. 5 to take effect from Aug. 20 for a period of six months. According to this agreement a certain number of German manufactured goods can enter the French market at a specially reduced tariff. This includes all kinds of articles which are not specially manufactured in France. In certain cases the tonnage of German products which can enter France is limited. In return, concessions are made for the importation into Germany of certain French agricultural products, silks and certain luxuries.

At about the same time this commercial agreement was being signed negotiations were being held between representatives of the German iron and steel industries and representatives of the iron and steel works of Lorraine and Luxemburg on the other with respect to the tonnage of Lorraine and Luxemburg iron and steel products which could be exported to Germany. It will be recalled that a little over a year ago a provisional agreement had already been arrived at and signed, but this agreement was made on the understanding that it would only come into effect when the general commercial agreement was arrived at, and as the commercial agreement did not materialize until the beginning of this month the so-called Luxemburg agreement never came into being. According to latest reports, this Luxemburg agreement has been revised in Paris and although actual figures are not yet disclosed it can be expected that a new provisional agreement will become effective shortly.

Lastly, the representatives of the iron and steel works of Germany, France, Belgium and Luxemburg have met in Paris with a view to laying down the principles of the international steel syndicate which already has been under discussion for several months. The basis on which quotas will be alloted to each participating country was also to be fixed. However, although most leading iron a ndsteel masters in the above-mention countries are in favor of the scheme, these negotiations have apparently broken down for the time being on account of opposition on the part of certain Belgian steelmakers who are not satisfied with the manner in which their quota is fixed. Nevertehless, since the desire for an international understanding is growing as time goes on there is no doubt negotiations will be resumed sooner or later, but it will be some time before any detailed agreement can be adhered to, particularly since in both France and Belgium production is not controlled as it is in Germany.

Great Britain is taking no active part in these negotiations but is being kept informed of all that is going on.

French Exports Decline

Paris, Aug. 18.—(*European Staff Service*)—Figures by the French foreign trade department relating to imports and exports of iron and steel disclose the fact that pig iron exports have been continually dropping since February. Exports of pig iron in June were only 38,520 metric tons, the lowest recorded for several years, compared with 49,862 tons in May and 68,487 tons, which was the highest figure reached this year, in February. It is interesting to note that while exports of pig iron are declining production figures since the beginning of this year have remained at a high level and reached their highest mark in May. It is true that the consumption of pig iron in France has been increasing since the beginning of this year, the demand from foundries having expanded and the tonnage of pig iron necessary for the production of steel also being considerable. However, it is apparent that France has been losing ground to Belgium and Luxemburg in her exports of pig iron. During June France exported 212,374 metric tons, which is the lowest figure reached this year and compares with 225,266 tons in May and 266,471 tons, which was the highest figure reached this year, in January. Imports of pig iron in June were 1842 metric tons, and imports of steel 18,720 tons.

Figures for first half show that exports of pig iron were 334,056 metric tons, slightly more than the tonnage exported during the first half of 1925 when the figure was 332,360 tons. Should the present trend of exports of pig iron continue, the slight increase over last year's exports soon will be lost. Exports of steel during the first six months of this year were 1,476,631 metric tons, against 1,544,204 tons during the corresponding period of 1925. These figures show that despite the considerable depreciation which the French franc has suffered in comparison with last year exports of French iron and steel tend to decline.

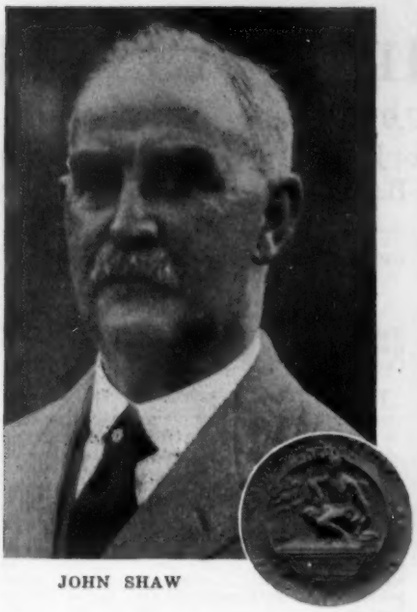
Imports of pig iron for the first half of 1926 totaled 12,817 metric tons, compared with 16,032 tons during the first half of last year. Imports of steel totaled 86,463 metric tons, against 73,726 tons during the first six months of 1925. The following table gives figures for the first half of this year, compared with the monthly averages of the three preceding years, in metric tons:

	Imports		Exports	
Monthly average	Pig iron	Steel	Pig iron	Steel
1923	5,305	55,495	49,320	153,990
1924	3,540	56,780	63,900	187,380
1925	2,693	11,703	58,855	272,270
1926				
January	2,657	6,906	64,888	266,471
February	2,244	6,996	68,487	253,322
March	3,236	16,686	56,445	259,032
April	2,026	17,197	55,854	260,176
May	812	19,958	49,862	225,266
June	1,842	18,720	38,520	212,374

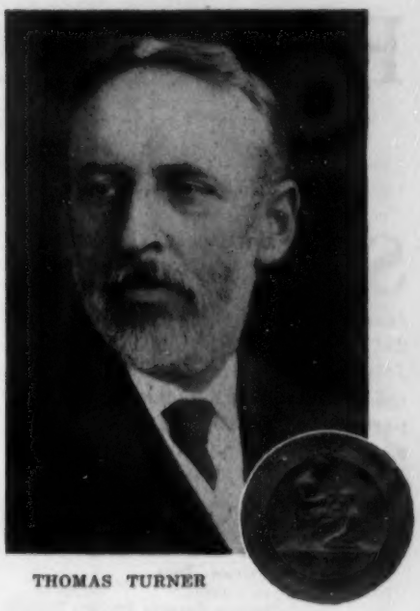
Import and export figures relating to iron ore for the first half of this year show French exports of iron ore were 5,191,150 metric tons, compared with 5,140,062 tons in the corresponding period of last year. The bulk of these exports 4,334,532 tons, went to Belgo-Luxemburg Economic Union; 396,286 tons to Germany, 374,399 tons to Holland, 179,725 tons to Great Britain and the remainder to other countries.

Imports of iron ore into France during the first six months of 1926 were 654,020 metric tons, against 536,416 tons during the first half of 1925. Of this tonnage the Belgo-Luxemburg Economic Union furnished 395,254 tons; Spain shipped 95,549 tons, Tunis 59,219 tons, Algeria 37,771 tons, Sweden 14,688 tons, the remainder coming from various other countries.

E. V. RONCERAY



JOHN SHAW



THOMAS TURNER

Foundrymen Award Gold Medals

ON THE recommendation of the board of awards of the American Foundrymen's association, the board of directors has approved the granting of gold medals to three prominent European foundrymen and metallurgists. Eugene V. Ronceray, Thiais, France, has been chosen to receive the J. H. Whiting gold medal; John Shaw, Sheffield, England, to receive the John A. Penton gold medal, and Prof. Thomas Turner, Birmingham, England, the Joseph F. Seaman medal.

Professor Turner is one of the British metallurgists whose work has been of fundamental importance in cast iron. John Shaw, a foundryman and student of casting metallurgy, has been influential in the development of British foundry practice. E. V. Ronceray is recognized as being a foundryman largely instrumental in the development of French foundry practice.

These gold medals which are to be presented at the thirtieth annual convention of the American Foundrymen's association and second International Foundrymen's congress to be held at Detroit from Sept. 27 to Oct. 1, are three of the four medals authorized by the association for presentation to outstanding men connected with the foundry industry. The medals were made possible by gifts contributed by John A. Penton, first secretary; Joseph S. Seaman, third president; W. H. MacFadden, tenth president and J. H. Whiting, vice president in 1906. The medals will be presented at the annual banquet to be held Thursday evening, Sept. 30.

EUGENE VICTOR RONCERAY who is to be awarded the J. H. Whiting gold medal of the American Foundrymen's association at the 1926 Detroit meeting is president of S. A. des Establissements Bonvillain et Ronceray, Choisy-le-Roi, near Paris. He also is president and managing director of the Universal System of Machine Molding & Machinery Co. Ltd., London, and director of studies at the Foundry High school, Paris.

Mr. Ronceray, born Nov. 15, 1869, took his engineering degree in 1891 at the Ecole Nationale des Arts et Metiers, Chalons. From 1891 to 1897 he was professor at Institution Parangon, near Paris. In 1897 he took a post with the Paris-Lyon-Mediterrance railroad. Later he became connected with Mr. Bonvillain with whom he established the first manufacture of molding machines in France. He became manager and then managing director of the company. Since 1923 he has been chairman, committee of papers, French foundry asscoiation.

JOHN SHAW, who is to receive the John A. Penton gold medal of the American Foundrymen's association at the second international foundrymen's congress, is one of the foremost British foundrymen.

He was educated at the Farnworth grammar school, Widnes technical school, and Liverpool university. After completing his education Mr. Shaw served his time as apprentice with the Widnes Foundry Co., and was in full charge at the age of 22. After six years in charge of a small foundry in Wales he became foundry manager for Cochrane and Co., Ltd., Dudley. During the war Mr. Shaw was director of the gray iron castings section of the British ministry of munitions. He is manager of the Newhall works of the Brightside Foundry & Engineering Co., Ltd., Sheffield, in which plant castings up to 120 tons in weight have been made.

He will present the 1926 exchange paper on behalf of the Institute of British Foundrymen.

THOMAS TURNER, to be presented with the Joseph S. Seaman gold medal of the American Foundrymen's association, has for years been professor of metallurgy, Birmingham university, England.

Prof. Turner was born in 1861, educated in the schools of Edgbaston and was graduated from the Royal School of Mines, London.

Professor Turner was presented with the Bessemer gold medal in 1925 in recognition of service to the iron and steel industry. As a further mark of esteem the Birmingham university awards the Thomas Turner gold and bronze medals for prizes in metallurgical work done by the students. Professor Turner has contributed papers to the meetings of the American Foundrymen's association and was made an honorary member of this association in 1901. He is a member of the Iron and Steel institute, president of the Institute of Metals, member of Institute of Mining and Metallurgy.

Exports Jump As Imports Drop

Balance of Trade Swings 77,015 Tons More to United States Favor as Imports at 82,411 Tons Are Smallest Since January and 194,717 Tons Exports Are Greatest Since January 1924—Bar, Rail, Tube and Sheet Shipments Increase

SHARP reaction in the status of American iron and steel foreign trade took place in July, the favorable balance swinging from 35,291 tons in June to 112,306 tons in July, according to data compiled by the iron and steel division of the department of commerce. Imports of 82,411 tons in July were the smallest of any month since January, and represented a considerable drop from 124,215 tons received in June. July exports aggregated 194,717 tons, compared with 159,506 tons in June and 139,861 tons in July, 1925, and was the largest monthly total since January, 1924, barely exceeding that of 194,449 tons in April, 1926.

IMPORTS AND EXPORTS
Gross Tons

	—1926—		—1925—	
	Imports	Exports	Imports	Exports
Jan.	79,067	174,585	77,105	141,777
Feb.	100,213	157,187	92,353	102,299
March	93,107	169,438	92,115	155,348
April	107,636	194,449	71,233	155,375
May	108,731	173,418	67,789	150,612
June	124,215	159,506	82,853	136,847
July	82,411	194,717	64,642	139,861
Aug.			68,489	188,465
Sept.			68,445	136,791
Oct.			80,045	141,817
Nov.			79,771	171,134
Dec.			98,400	142,209
Total	695,380	1,223,300	943,240	1,762,571

Imports for the first seven months of 1926 totaled 695,380 tons, compared with 556,353 tons for the same period of 1925 and 943,240 tons for all of last year. Exports in the January-July period of 1926 amounted to 1,223,300 tons, compared with 982,156 tons in those months last year.

Increased shipments of bars, galvanized sheets, black sheets, tin plate, steel rails and boiler tubes were responsible largely for the gain in total exports in July. Boiler tubes and welded pipe formed the largest item on the list totaling 24,665 tons in July, compared with 16,009 tons in June. Tin plate shipments formed the next largest classification, amounting to 20,197 tons, compared with 12,432 tons in June. Ingots, blooms and skelp represented one of the largest increases, gaining in the June-July period from 4680 to 13,783 tons.

Canadian imports of American iron and steel in July totaled 79,596 tons. Japan increased its purchases from 12,099 tons in June to 26,005 tons in July. Total imports of American steel in that country for the first seven months of 1926 amounted to 156,345 tons compared with 65,236 tons in that period of 1925. Shipments to South American countries in July totaled 29,265 tons, to Europe, 11,869 tons; to the Far East, 47,958 tons and to Africa, 1368 tons. North American countries including the West Indies, which took 104,257 tons. Import decline was due to a falling

ORIGIN OF FERROMANGANESE IMPORTS
Gross Tons

	1926	
	July	June
Norway	358	3,307
United Kingdom	4	6
Canada	258	980
Totals	620	4,023

ORIGIN OF MANGANESE IMPORTS
Concentrates
Gross Tons

	1926		7 months ended
	July	June	July
Germany			46
Netherlands			12
Norway			1,721
Soviet Russia in Europe	15,425	15,698	114,528
Canada	34	27	101
Brazil	11,091	10,072	75,199
Chile	480		1,916
British India	1,559	2,719	13,959
British West Africa	2,329	2,799	22,889
Totals	34,133	31,315	234,256

ORIGIN OF IRON ORE IMPORTS
Gross Tons

	July	June
Germany	1,144	2,860
Spain	8,840	27,250
Canada	1,094	885
Cuba	57,200	33,550
Chile	110,800	110,300
Algeria and Tunis	35,331	89,729
Other countries	18,438	7,875
Totals	232,847	272,449

ORIGIN OF PIG IRON IMPORTS
Gross Tons

	July	Seven months June ended July	
Belgium	450	5	7,098
France	1,800		26,843
Germany	10,573	15,535	100,220
Netherlands	5,042	8,250	49,476
Norway			
Sweden	502	175	1,614
United Kingdom	8,724	8,275	88,795
Canada	230	91	3,248
Panama			
British India	4,885	10,775	71,183
Totals	32,206	43,106	344,366

ORIGIN OF IMPORTS
Gross Tons

Country	July, 1926 Cast iron pipe	Steel bars	Steel scrap	Ingots blooms, etc.
Belgium	2,583	4,059		256
France	7,221	1,047		1,265
Germany		2,330		
Netherlands		129		
Sweden		612		
United Kingdom		54		25
Other Europe		16		8
British West Indies				
Canada	641		2,660	
Other countries	714	9	309	436
	11,159	8,256	2,969	1,990

ORIGIN OF IRON AND STEEL IMPORTS
Gross Tons

From:	July	June	January through July
Austria	30	28	407
Belgium	17,173	29,501	122,582
Czechoslovakia	11	15	679
Denmark			33
Finland			799
France	12,110	12,541	86,638
Germany	24,014	32,585	152,823
Italy	127	102	393
Lithuania			1,530
Netherlands	5,459	8,474	64,915
Norway	367	3,103	9,278
Poland and Danzig	344	259	603
Spain	1	1	2
Sweden	2,369	33,942	16,680
Switzerland		1	7
United Kingdom	9,653	9,909	106,961
Canada	5,825	5,208	39,639
Honduras			1
Panama			7,748
Mexico	40	7,757	7,969
Other British West Indies			403
French West Indies		1	1
Cuba			3,599
Dominican Republic			62
Virgin Islands of U. S.		3	3
Chile			4
India	4,885	10,775	71,593
China	1	1	5
Hongkong	1		1
Java and Madura			1
Japan and Chosen	1	2	14
Algeria and Tunis		7	7
Total	82,411	124,215	695,380

IMPORTS OF IRON AND STEEL
Gross Tons

	June 1926	July 1926	Jan. through July 1926	1925
Pig iron	43,106	32,206	350,366	255,047
Ferromanganese and alloys	4,023	620	23,611	44,322
Ferrosilicon	1,254	1,082	6,374	3,480
Scrap	10,354	2,969	35,066	54,415
Iron slabs			42	13
Steel ingots, blooms, billets, etc.	5,111	1,990	20,962	18,460
Steel bars	14,902	8,256	63,795	34,920
Iron bars	558	160	3,207	8,123
Wire rods	743	511	5,399	4,633
Hoops, bands, and scrolls	1,547	1,303	12,193	7,585
Boiler and other plate	1,147	492	3,566	233
Sheets, skelp and saw plate	748	472	3,784	2,277
Tin plate	548	65	2,008	163
Structural shapes	14,011	10,613	58,434	48,907
Rails and splice bars	13,961	4,158	36,340	28,577
Cast iron pipe	7,818	11,159	39,959	26,191
Other pipe and tubes	1,367	4,255	15,787	8,382
Barbed wire	92	29	2,171	2,580
Round iron and steel wire	358	410	2,389	2,228
Steel telegraph and telephone wire	37	2	121	377
Flat wire and strip steel	1,093	369	2,560	1,262
Wire rope and strand	317	389	1,575	1,046
Wire cloth and screening	34	41	238	126
Other wire	34	173	1,221	167
Nails, tacks and staples	675	449	2,366	823
Bolts, nuts, rivets and washers	14	23	262	53
Castings and forgings	362	215	1,584	1,877
Horseshoes	1		1	86
Total	124,215	82,411	695,380	556,353

off in the general list, although a drop of 10,900 tons in pig iron receipts aided materially.

EXPORTS OF IRON AND STEEL

Gross Tons

	June 1926	July 1926	Jan. through July 1926	1925
Pig iron, not including ferroalloys	1,369	2,595	11,711	13,609
Ferromanganese spiegelesen	107	55	333	5,211
Scrap	12,309	8,910	71,125	45,784
Ingots, blooms, skelp, etc.	4,680	13,783	42,956	40,102
Iron bars	344	412	2,559	3,079
Steel bars	8,630	11,962	80,024	62,991
Alloy steel bars	337	716	3,291	2,528
Wire rods	1,084	775	10,416	14,822
Plates	14,070	10,844	79,095	59,827
Galvanized sheets	12,410	14,883	103,221	98,714
Black steel sheets	11,563	17,277	108,454	44,413
Black iron sheets	1,580	1,067	12,052	8,017
Hoops, bands and strip	3,526	4,251	30,046	22,815
Tin plate, terne plate, etc.	12,432	20,197	118,539	88,695
Structural shapes, plain	15,945	12,478	88,397	49,895
Structural fabricated	5,655	7,067	50,710	37,809
Metal lath	432	412	2,906	1,821
Steel rails	14,495	20,241	91,432	95,749
Rail fastenings, frogs, etc.	2,681	4,251	24,413	20,710
Boiler tubes and welded pipe	16,009	24,665	152,891	125,921
Malleable iron screwed pipe fittings	664	1,291	7,381	5,147
Cast iron screwed pipe fittings	744	909	5,841	3,633
Cast iron pressure pipe and fittings	3,517	346	7,511	6,860
Cast iron soil pipe and fittings	587	620	7,536	6,480
Plain wire	2,320	2,420	21,862	22,022
Barbed wire and woven wire fencing	4,597	4,730	35,547	43,290
Wire cloth and screening	211	228	1,210	1,121
Wire rope	310	284	2,902	2,810
Insulated wire and cable	37	98	424	451
Other wire and manufactures	984	693	5,116	4,748
Wire nails	802	1,241	7,428	5,128
Nails other than wire	631	686	4,577	5,426
Tacks	81	81	566	*
Horseshoes	87	20	347	396
Bolts, nuts, rivets, except track	1,107	1,252	8,321	9,992
Car wheels and axles	1,461	1,336	9,875	12,694
Iron castings	1,085	865	5,341	5,501
Steel castings	358	562	5,221	3,034
Forgings	315	214	1,723	1,411
Total	159,506	194,717	1,223,300	982,156

*Included with "other nails."

DESTINATION OF EXPORTS

Gross Tons

Country of destination	July 1926	Jan. through July 1926	1925
North and Central America and the West Indies	104,257	645,546	525,795
Canada and Newfoundland	79,651	483,880	330,843
Cuba	7,849	52,087	84,661
Mexico	10,838	60,065	68,521
Guatemala	635	7,969	4,441
Salvador	849	11,480	9,064
Panama	534	4,887	6,993
British West Indies	905	5,409	4,299
Other West Indies	1,341	9,734	8,357
Other Central America	1,655	10,035	8,616
South America	29,265	198,210	187,538
Argentina	4,587	34,955	64,883
Venezuela	7,387	38,475	17,310
Colombia	4,534	36,980	33,805
Chile	4,427	36,802	29,197
Peru	1,685	19,835	8,878
Brazil	5,991	24,450	27,206
Other South America	654	6,713	6,320
Europe	11,869	79,917	80,091
United Kingdom	7,409	32,051	27,287
Italy	424	22,187	27,878
France	144	7,055	3,469
Russia	.....	2,807	491
Rumania	153	2,057	553
Turkey	1,540	2,232	978
Other Europe	2,199	11,528	19,435
Far East	47,958	290,085	169,211
Japan and Chosen	26,005	156,345	65,236
Philippine Islands	8,598	39,055	28,913
India	1,389	19,958	9,335
China	4,304	21,567	30,690
Dutch East Indies	3,355	19,865	11,851
Australia	1,409	13,827	13,225
Kwangtung	402	7,599	1,495
British Malaya	320	5,133	3,254
Other Asia and far eastern markets	2,176	6,756	5,212
Africa	1,368	9,542	19,460
British South Africa	641	4,796	17,275
Egypt	246	3,237	1,251
Portuguese East Africa	414	1,261	595
Other Africa	67	248	339

DESTINATIONS OF IRON AND STEEL EXPORTS

Gross Tons

Countries	Rails	Galvanized sheets	Plates not fabricated	Tin, terne plate	Steel sheets black	Barbed wire	Steel bars	Steel scrap
Argentina	.....	1,339	.....	1,849	.....	160	.....	.....
Australia	.....	108	3	.....	369	62	.....	.....
Brazil	1,685	1,246	40	446	.....	563	176	.....
British India	.....	192	.....	.....	.....	.....	.....	.....
British S. Africa	.....	60	.....	.....	.....	293	.....	.....
Canada	2,770	2,431	9,860	3,964	6,897	273	6,764	7,492
Chile	496	249	44	523	.....	.....	.....	.....
China	4	425	.....	2,408	.....	.....	240	388
Colombia	1,470	429	.....	11	.....	463	.....	.....
Cuba	1,941	546	390	153	.....	279	327	.....
Central America	498	706	25	.....	17	208	65	.....
Dutch East Indies	.....	736	.....	.....	.....	.....	.....	.....
Dutch West Indies	46	.....	.....	43	.....	.....	.....	.....
Italy	.....	.....	.....	376	.....	.....	.....	.....
Japan	5,846	253	.....	3,476	8,671	.....	282	984
Java and Madura	.....	.....	.....	145	.....	.....	.....	.....
Mexico	2,711	685	61	615	97	391	288	46
Europe	.....	.....	6	.....	102	.....	24	.....
Other Europe	.....	120	.....	816	.....	.....	.....	.....
Other Countries	.....	.....	.....	.....	.....	1,120	.....	.....
Norway	.....	80	.....	.....	.....	.....	.....	.....
Other S. America	.....	3,970	.....	.....	.....	.....	.....	.....
Peru	28	.....	14	523	1	.....	125	.....
Philippine Islands	1,663	.....	.....	1,024	160	547	243	.....
United Kingdom	.....	.....	.....	.....	163	.....	2,370	.....
Uruguay	.....	.....	.....	39	.....	.....	.....	.....
Venezuela	233	.....	.....	31	.....	.....	.....	.....
Total	20,241	14,883	10,531	20,197	17,277	4,241	11,962	8,910

Exports of Metalworking Machinery

In number except where otherwise specified

	July 1925	July 1926	Seven months ended July 1925	Seven months ended July 1926
Lathes	118	.....	889	.....
Boring and drilling machine tools	138	.....	891	.....
Planers, shapers and slotters	22	.....	201	.....
Bending and power presses	46	.....	222	.....
Gear cutting machines	29	.....	291	.....
Milling machines	88	.....	568	.....
Punching and shearing machines	24	.....	124	.....
Power hammers	31	.....	156	.....
Other metalworking machinery and parts (lbs.)	1,324,561	.....	8,262,610	.....
Engine lathes	.....	12	.....	70
Turret lathes	.....	11	.....	78
Other lathes	.....	71	.....	421
Vertical boring mills and chucking machines	.....	3	.....	53
Thread cutting and automatic screw machines	57	114	499	518
Knee and column type milling machines	.....	35	.....	127
Other milling machines	.....	25	.....	260
Disk type gear cutting machines	.....	1	.....	5
Other gear cutting machines	.....	18	.....	112
Vertical drilling machines	.....	17	.....	209
Radial drilling machines	.....	2	.....	45
Sensitive drilling machines	.....	28	.....	677
Other drilling machines	.....	62	.....	783
Metal sawing and cutting off machines	.....	28	.....	133
Shapers and slotters	.....	16	.....	409
Planers	.....	2	.....	13
External cylindrical grinding machines	87	48	985	340
Internal grinding machines	30	8	179	141
Metalworking tool sharpening machines	.....	71	.....	577
Other metal grinding machines (pounds)	164,198	49,628	952,878	448,086
Sheet metalworking machines (pounds)	.....	546,797	.....	2,549,652
Plate metalworking machines (pounds)	.....	78,150	.....	164,072
Rod or wireworking machines (pounds)	.....	37,640	.....	308,006
Forging machinery (pounds)	.....	800,111	.....	3,814,782
Rolling mill machinery (pounds)	.....	64,889	.....	2,595,298
Foundry and molding equipment (pounds)	186,336	1,080,551	2,158,489	3,515,706
Other power-driven metalworking machinery and parts (pounds)	.....	749,043	.....	4,626,689
Other metalworking machinery (total)	$452,781	$371,787	$2,490,731	$2,654,451
Hand or foot operated metalworking machinery and parts (pounds)	.....	36,687	.....	146,271
Pneumatic portable tools	1,618	1,269	9,451	11,035
Other portable metalworking machines (pounds)	.....	26,982	.....	168,922
Chucks for machine tools	2,834	583	15,958	15,103
Reamers, cutters, drills, taps, dies, and other metalworking tools (pounds)	494,404	198,413	2,008,801	1,316,917

News of Societies

THE complete program for the fall convention of the Ohio State Foundrymen's association has just been announced and includes a number of worthwhile papers on foundry subjects. The meeting is to be held at Hotel Sinton, Cincinnati, Sept. 16-17. The program is as follows:

Thursday, Sept. 16

MORNING

8:30 a. m.—Registration, main floor, Committee meetings.
12:00 m.—Buffet luncheon, ballroom.

AFTERNOON

1:00 p. m.—Opening session, ballroom.
Address of welcome.
Response, C. C. Smith, Toledo Steel Castings Co., Toledo, O.
"The Romance of Research," Herman Schneider, Dean of the College of Engineering and Commerce, University of Cincinnati, Cincinnati.
"Brass Foundry Problems," Fred Wolf, Ohio Brass Co., Mansfield, O.
"Rational Cupola Melting," E. J. Lowry, Hickman, Williams & Co., Chicago.
"Foundry Costs," A. E. Grover, Berea, O.

EVENING

6:45 p. m.—Banquet, ballroom.
8:45 p. m.—Entertainment, ballroom.

Friday, Sept. 17

MORNING

8:30 a. m.—Sightseeing trip.
9:30 a. m.—Plant inspection, Laidlaw works, Worthington Pump & Machinery Corp.
12:00 m.—Luncheon and round-table discussion, ballroom.

AFTERNOON

2:00 p. m.—Technical and business session, ballroom.
"The Foundryman's Interest in Railroads," J. M. Fitzgerald, formerly of Western Maryland Railway Co.
"Manufacture of Pig Iron," G. A. Richardson, Bethlehem Steel Co., Bethlehem, Pa.
Reports of officers.
Reports of committees.

EVENING

6:30 p. m.—Dinner, Castle Farm.

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Exhibits at the fifth national exposition of power and mechanical engineering at the Grand Central Palace, New York, the week of Dec. 6 will fill four floors and cover mechanical equipment used in all industries. Devices for the generation of power and heat will cover a wide field, and there also will be exhibits of equipment for ventilating, refrigerating, power transmission, material handling and machine tools.

* * *

Association of Iron and Steel Electrical Engineers has been given an invitation to visit the Cambria plant of the Bethlehem Steel Co. at Johnstown, Pa., Sept. 25, to inspect four new, modern bar mills which have just been placed in operation. Other departments will also be open for inspection to those who desire. The new power plant is another subject of interest. The new bar mills represent the latest development of rolling mill practice, in safety, mechanical, electrical and combustion developments. A special train leaves the union station at Pittsburgh at 9 o'clock daylight saving time.

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A joint meeting will be held Sept. 20-24 at Denver, Colo., of members of the western division of the American Mining Congress, American Institute of Mining and Metallurgical Engineers, American Association of Petroleum Geologists and the American Silver Producers association. Sessions of the Mining and Metallurgical Engineers will be held Sept. 22, John W. Finch presiding in the morning and Charles W. Henderson in the afternoon. Addresses will be made by Dr. H. Foster Bain, secretary of the institute and former director of the bureau of mines; M. F. Coolbaugh, president of the Colorado school of mines, on the progress of leaching and electrolytic metallurgy; Prof. A. J. Weinig, superintendent of the experimental station of the Colorado school of mines, and M. J. Gavin, refining engineer of the bureau of mines.

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Open-hearth superintendents will meet in Pittsburgh Oct. 5 to 9 in conjunction with the Institute of Mining and Metallurgical Engineers, whose gathering will be between those dates.

Convention Calendar

Aug. 30-Sept. 2—American Ceramic Society. Summer meeting at Bellevue-Stratford hotel, Philadelphia. Ross C. Purdy, Lord hall, Ohio State University, Columbus, is secretary.

Sept. 1-4—Institute of Metals. Autumn meeting at Liege, Belgium. G. Shaw Scott, 36 Victoria street, S. W. 1, London, is secretary.

Sept. 7-16—New Haven Machine Tool exhibition. Annual exhibit at Mason laboratory, Yale university, New Haven, Conn. Administrative offices, 400 Temple street, New Haven, Conn.

Sept. 8-9—Lake Superior Mining Institute. Twenty-fifth annual meeting at Ironwood, Mich. A. J. Youngbluth, Ishpeming, Mich., is secretary.

Sept. 13-15—Concrete Reinforcing Steel institute. Semiannual meeting at French Lick, Ind. M. A. Beeman, 435 North Michigan avenue, Chicago, is secretary.

Sept. 16-17—Ohio State Foundrymen's association. Annual meeting at Hotel Sinton, Cincinnati. Arthur J. Tuscany, 5713 Euclid avenue, Cleveland, is secretary.

Sept. 20-25—American Society for Steel Treating. Eighth annual convention and exposition at Municipal Pier, Chicago. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Sept. 21-23—Society of Automotive Engineers. Production meeting at Hotel Sherman, Chicago. John Warner, 29 West Thirty-ninth street, New York, is manager of meetings department.

Sept. 27-Oct. 1—American Foundrymen's association. Second international congress and exposition at Michigan State Fair Grounds, Detroit. C. E. Hoyt, Marquette building, Chicago, is secretary.

Oct. 5-6—National Association of Manufacturers. Thirty-second annual meeting at Waldorf-Astoria hotel, New York. George S. Boudinot, 50 Church street, is secretary.

Oct. 7-9—American Electrochemical society. Fall meeting at Hotel Washington, Washington. Dr. Colin G. Fink, Columbia university, New York, is secretary.

Oct. 11-13—American Management association. Autumn conference at Hotel Statler, Cleveland. W. J. Donald, 20 Vesey street, New York, is managing director.

Oct. 11-15—American Gas association. Annual convention and exposition at Atlantic City, N. J. Alexander Forward, 342 Madison avenue, New York, is secretary-manager.

Oct. 14-16—American Gear Manufacturers' association. Fall meeting at Briarcliff Lodge, Briarcliff Manor, N. Y. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

Oct. 22—American Iron and Steel institute. Fall meeting at Hotel Commodore, New York. E. A. S. Clarke, 40 Rector street, New York, is secretary.

Oct. 25-29—National Safety council. Annual congress and exhibition at Detroit. W. H. Cameron, 108 East Ohio street, Chicago, is managing director.

Malleable Bookings Gain

Washington, Aug. 31.—Bookings of malleable castings in July totaled 55,766 tons compared with 45,548 tons in June, and were the largest since March, according to returns from 139 plants to the department of commerce. Production fell from 61,023 tons in June to 55,555 tons in July, the latter month representing the smallest output since November 1924. July operations were 51.1 per cent of capacity compared with 55.3 per cent in June and 50.3 per cent in July 1925. Further comparisons fellow:

1925	Total tons produced	Per cent of capacity	Total tons booked	Monthly capacity
July	57,172	50.3	56,873	113,624
Total (7 mos.)	427,609	53.8	379,843	794,334
August	56,761	49.8	48,647	113,935
September	58,474	51.4	49,780	113,697
October	68,122	61.0	65,420	111,744
November	60,800	55.1	55,552	110,273
December	65,766	59.0	53,991	111,332
1926				
January	75,658	68.2	65,738	110,824
February	66,401	59.2	58,379	110,895
March	74,520	67.4	70,193	110,539
April	66,733	60.4	52,649	**110,415
May	60,128	55.2	49,179	**108,891
June	61,023	55.3	45,548	**110,228
July	55,555	51.1	55,766	**108,655
Total (7 mos.)	460,018	59.7	386,063	770,447

**Capacity for May and June based on following fomula: "Total number of units of molding floor space, times average production per molder per day per unit of floor space, times number of actual working days per month."

Bos-Hatten Sheet Iron & Plate Works, Buffalo, has changed its name to Bos-Hatten.

Industrial Men in the Day's News

Hollinshead N. Taylor, in Charge of the National Aeronautic Races

AVIATION is his chief diversion from the steel business and he has been active in co-operation with the department of commerce in development of commercial air transportation.

HE REPRESENTS the fourth generation of Taylors to manufacture steel in the United States, tracing his industrial history back to Wales where his ancestors conducted a primitive iron works in 1565.

MEMBER of many social and industrial societies and organizations, he still finds time for golf. He is an ardent fisherman, vacationing annually in Nova Scotia.

THE week of Sept. 4-11 will see gathered together in Philadelphia the largest assemblage of airplanes in the history of the world. More than 1000 planes of all kinds will be there to compete in the national air races to be held under the auspices of the National Aeronautic association. It has devolved upon the steel industry to furnish the man who has entire charge of the direction of this gigantic affair. He is Hollinshead N. Taylor, one of the younger executives in the industry.

As president of the N. & G. Taylor Co., Philadelphia, with mills at Cumberland, Md., Mr. Taylor represents the fourth generation in direct line from one of the Taylors who founded the business in 1810. However, the business in this country really was in the nature of a continuation of the industry established in Pontypool, Wales. by the Hanbury family, ancestors of the Taylors, in 1565. The Hanbury family at first conducted a primitive iron works, operated by water power and producing iron bars and sheets. In 1720, Maj. John Hanbury introduced the art of tinning into England, commencing the manufacture of tin plate at the Pontypool works by a process that had been originated in Saxony. Hence, the manufacture of sheets and tin plate has been a family business with the Hanbury-Tracy-Taylor line for more than three and a half centuries.

Aviation comprises Mr. Taylor's chief interest aside from his business. For many years he has been working actively with the department of commerce for the development of commercial aviation. He is chairman of the aviation committee of the Sesquicentennial exposition and was one of the principal promoters of the Philadelphia municipal air port which recently was opened and now is in regular use. It is as chairman of the national air races committee of the National Aeronautic association that he has charge of all details of the great air meet.

Born in Philadelphia in 1879, Mr. Taylor received his education at the University of Pennsylvania, graduating in 1901 with a bachelor of science degree. Mr. Taylor led an active undergraduate life. He was a founder of the French club, a founder of the University golf club and he was the university's first golf champion.

Mr. Taylor has served the industry in various ways. For two years he was chairman of the committee on the simplification of terne plate, which functioned under the auspices of the department of commerce. For 12 years he has been president of the Drop Forge Supply association. He is president of the Taylor-Offut Coal Co. and a director of the Copper Plate Sheet & Tube Co. Mr. Taylor has numerous other interests. He is vice president and a director of the Philadelphia chamber of commerce. For years he has been a prominent figure in that body. He is a member of the joint executive committee on the improvement of the harbor of Philadelphia and the Delaware and Schuylkill rivers; he was chairman of the chamber's public utilities committee for two years, chairman of its industrial committee for two years, and he is a member of the chamber's aviation, finance and executive committees. He is a director of the Automobile club of Philadelphia, president of the Philadelphia chapter of the National Aeronautic association and vice president of the Aero Club of Pennsylvania.

Mr. Taylor is a member of the Society of Automotive Engineers, American Iron and Steel institute, Franklin institute, Historical Society of Pennsylvania, Philadelphia

Academy of Fine Arts and the Army Ordnance association. He is a member of the Rittenhouse club, the University club, the Down Town club, Orpheus club, Mask and Wig club of the University of Pennsylvania and the Engineers club, all of Philadelphia.

Mr. Taylor lives with his family at Bethayres, Pa., in the beautiful Huntingdon valley section of the suburbs of Philadelphia. His church is St. Martin-in-the-Fields, Philadelphia, where he is secretary of the vestry. Mr. Taylor plays golf at the Huntingdon Valley country club near Philadelphia. He is an ardent fisherman and during his vacations goes to Nova Scotia for salmon and trout.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

RALPH L. SHAW has been appointed Milwaukee district representative for the W. A. Jones Foundry & Machine Co., Chicago, manufacturer of power transmission machinery, gears, clutches and speed reducers, etc. He succeeds Fred E. Holtz, resigned. Mr. Shaw for 12 years has been with the Jones company at the home office and as Chicago district sales manager. His headquarters will be at 425 East Water street, Milwaukee.

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William Hutton Blauvelt, consulting engineer, 120 Broadway, New York, is expected to return Sept. 10, from a trip to Europe.

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Sydney Bauman has been appointed cashier of the Penn Jersey Steel Co., Camden, N. J., in charge of finance and accounting effective Sept. 1.

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Gustav A. Heckscher, manager of blast furnaces at Swedeland, Pa., for the Alan Wood Iron & Steel Co., Philadelphia, has left for a trip to Europe. He expects to return in October.

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K. I. Clisby has been appointed New York representative for the Clark Controller Co., Cleveland, manufacturer of electrical and mechanical apparatus. His headquarters will be in the Woolworth building.

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D. G. Irions, formerly branch manager at Denver for the Speeder Machinery Corp, has been appointed manager at Portland, Oreg. for the L. A. Snow Co., road and handling equipment distributor.

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Prof. W. L. De Baufre, chairman of the mechanical engineering department of the University of Nebraska, has been added to the research staff of the International Combustion Engineering Corp., 43 Broad street, New York. Prof. De Baufre will continue his consulting work for the United States bureau of mines. He is a member of the board of helium engineers and of the advisory committee on the use of oxygen or oxygenated air in metallurgical and allied proccesses.

* * *

J. N. Joyce has joined the Cleveland office of the Bridgeport Brass Co., Bridgeport, Conn. He is a graduate of the University of Cincinnati, Cincinnati. He will have his headquarters at 2017 Superior viaduct, Cleveland.

* * *

Feadore F. Foss, assistant to president, Wheeling Steel Corp., Wheeling, W. Va., returned from Europe, Aug. 25, on the MAJESTIC. He had been abroad in the interests of his company for the past five months. During that time he visited iron and steel plants and iron mines in France, Germany, Czecho-slovakia, Belgium, Luxemburg, England and Scotland.

* *

John McGeorge has joined the McCann-Harrison Corp., Cleveland, manufacturer of air heaters, furnaces, ovens and dryers, in charge of its oven and conveyor engineering department. Mr. McGeorge is a life member of the American Society of Mechanical Engineers, and a member of the Society of Automotive Engineers and the Cleveland Engineering society. At one time he was chief engineer for the Wellman-Seaver-Morgan Co., Cleveland, and recently was plant engineer for the Oakland-Pontiac division of the General Motors Co.

* *

Joseph H. Ehlers has been appointed engineering trade commissioner of the department of commerce at Tokyo, Japan, according to announcement of Dr. Julius Klein, director of the bureau of foreign and domestic commerce. Mr. Ehlers was born in Hartford, Conn. and was educated at Trinity college, where he received degrees of bachelor and master of science, at University of California and Cornell university, receiving a degree as master of chemical engineering in the last. He was for a time a professor of structural engineering at Pei Young university Tientsin, China.

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Harry S. Schott has been appointed general sales manager of the National Carbon Co., Inc., New York, effective Aug. 1. He previously had been assistant general sales manager for two years. He has been in the electrical business for about 25 years, joining the National Carbon interests in 1918 as assistant sales manager of the Canadian National Carbon Co. In 1920 he became eastern sales manager of the American Eveready Works, becoming eastern district manager for the National Carbon Co. when that organization acquired the Eveready works. He was appointed assistant general sales manager of National Carbon in 1924.

* * *

T. L. Wilson will be in charge of the newly opened Chicago office of Walter-Wallingford & Co., Cincinnati, pig iron, coke and alloy interests. His headquarters will be at 1442 Straus building, 310 South Michigan avenue. He formerly was with the South works of the Illinois Steel Co., Chicago.

E. R. Staat and B. A. Patch will be associated with him. Both previously were with Hickman-Williams & Co., Chicago. Mr. Wilson formerly was associated with Hickman-Williams & Co., for eight years as salesman and resident manager. Mr. Staat for 20 years was salesman and traffic manager and Mr. Patch for several years was a salesman.

* * *

J. J. Gandhi, general mill superintendent of the Tata Iron & Steel Co., Jamshedpur, India, expects to sail from New York Sept. 8 to return to his native country after a trip of several months to the United

States. During his stay here, Mr. Gandhi visited iron and steel plants and equipment manufacturers in various parts of the country.

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Thomas E. Richards, formerly district sales manager in New York for the American Wire Fabrics Corp., now is associated with the John M. Hart Co., Chicago, manager of sales for the Hanover Wire Cloth Co., as assistant sales manager.

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Erastus Phipps, superintendent of the Duesenberg Motors Co., Indianapolis, was injured seriously Aug. 29 when an automobile in which he was riding enroute home from Detroit, Mich., struck the rear end of a truck near Greenfield, Ind.

* * *

F. S. Murphy Jr. has joined the service department of the Quigley Furnace Specialties Co. Inc., New York, with his headquarters at San Francisco. He will cover the entire west coast, including California, Colorado, Texas, Utah, Oregon, Washington, Wyoming, British Columbia and the Orient.

* * *

Edward A. Tank, who was connected with the General Tool & Mfg. Co., Milwaukee, defendant in bankruptcy proceedings instituted recently, has organized the Cream City Tool & Mfg. Co. of Milwaukee, a Wisconsin corporation with a capital consisting of 200 shares without par value. A plant is being equipped for the manufacture of tools, dies, jigs, fixtures and machinery.

American Unions Will Aid British Strikers

A committee of five representing the British trades unions is seeking financial aid in the United States for the coal miners who have been on strike since May 1, and other union workers now unemployed. Ben Tillett, one of the members of the committee, announced while in Cleveland last week that 21 American railway labor organizations have pledged financial and moral support, but it was not made clear whether money is to be taken from the organization's funds, or if they rely entirely on voluntary contributions from members. It was said that officials of the railway unions signed "the appeal."

A committee drafted a resolution adopted by the representatitves of the unions, saying that 1,000,000 British coal miners "are fighting with their backs to the wall for a living wage and decent working conditions." As the result of four months idleness they are facing starvation, according to the resolution.

Tillett was quoted as saying that Wall street dominates "the reactionary British government." He charged that subsidy money for the British mines went to profit account, and that the dividends in the last ten years have amounted to three times the value of the mines. The British miners, he said, receive an average weekly wage of $10, and mine owners propose to reduce the amount by 25 per cent.

Place Larger Coal Order

Birmingham, Ala., Aug. 30.—The Orleans public service department has placed an order with the National Coal & Coke Co.. Birmingham, for 1000 tons of washed coal daily, for three years. Other contracts are being negotiated by Alabama coal producers and prospects are that 1,000,000 tons of coal per annum will be required in New Orleans from this district.

Obituary

THEODORE H. WICKWIRE, prominent manufacturer, died at the age of 75 in a Buffalo hospital, Aug. 25. Mr. Wickwire had been a member of Wickwire Bros., Cortland, N. Y., for 54 years. In 1907 he organized the Wickwire Steel Co., Buffalo, which subsequently was merged with other companies to make the Wickwire-Spencer Steel Corp. which was reorganized in 1925 as the Wickwire-Spencer Steel Co. He was chairman of the board of Wickwire Bros. Mr. Wickwire had been a member of the board of managers of the Cortland State Normal school for 40 years, was a trustee of the Auburn Theological seminary and vice president of the Second National bank of Cortland.

* * *

William Hood, dean of American railroad engineers and for 30 years chief engineer of the Central Pacific and Southern Pacific railroads, died Aug. 26 following a brief illness. He was born at Concord, N. H., 80 years ago and had been a resident of California for nearly 60 years. Mr. Hood was retired by the Southern Pacific May 3, 1921 on the fifty-fourth anniversary of the day when he obtained employment with the company as an axeman.

Mott & McElrath Engineering Corp., New York, has increased its capital from $9000 to $19,000.

Cleveland Steel Co. Will Discontinue Business

The decision reached by the directors of the Cleveland Steel Co., Cleveland, to discontinue business and to liquidate their property will represent the passing of one of the early landmarks identified with the rolling of iron and steel in the Cleveland district and the Central West. The company has been advising its customers that when the present rollings are completed, operations will be permanently discontinued. Negotiations for the acquisition of the property by an independent steel company are being carried on.

The original plant of the present Cleveland Steel Co. was built in 1853 for the rolling of plates and was one of the first mills to be established in Cleveland. The mills were built and operated by the Cleveland Boiler & Plate Iron Works later known as the Cleveland Boiler Plate Mfg. Co. In 1879 that company was succeeded by the Britton Iron & Steel Co. The Cleveland Steel Co. took over the present property from the Britton company in 1893. The mills were rebuilt in 1873 and 1891. At the present time the equipment consists of a 72-inch, 3-high plate mill with an annual capacity of 60,000 tons of sheared plates, No. 12 and heavier, up to 64 inches wide. The company has made a specialty of tank plates, stamping sheets and special analysis plates and sheets.

After having passed through various managements, some years after its founding the property came into the possession of John D. Rockefeller and was operated by his agents for a long period. The Rockefellers were in control when the company was incorporated as the Cleveland Steel Co. in 1893. In 1916 the property was purchased from the Rockefeller Foundation in the hands of which it then rested, by the present owners, headed by James C. Jones who had started with the company as an office boy and subsequently became its general manager. Mr. Jones had operated the mill for some years in behalf of the Rockefeller interests. The present officers of the company are Mr. Jones, president and general manager; W. S. Bowler, vice president; F. W. Throssell, treasurer; J. V. Cowling of Chicago, secretary and A. C. Baker, assistant secretary and assistant treasurer. Sales offices have been conducted in various cities including Chicago, Detroit, Los Angeles, St. Louis and St. Paul.

National Chemical Co., Fabius, N. Y., has increased its capital from $100,000 to $130,000.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

NASH MOTORS CO., Kenosha, Wis., has approved a program for increasing capacity of its plants at Racine, Kenosha and Milmaukee, Wis., by addition of equipment The production of the Racine plant will be increased from 200 to 250 cars per day by this addition and rearrangement of the plant. Similar increases are planned for the other plants.

* * *

GRAVER CORP., East Chicago, Ind., has taken contracts from the Golden Rule Refining Co., Wichita, Kan., and the Garber Refining Co., Garber, Okla., for a 1000-barrel cracking unit for each.

* * *

YOST SUPERIOR CO., Springfield, O., manufacturer of coiled wire springs, and water power washing machines, has increased its production 50 per cent and has largely added to its electric equipqment.

* * *

NORTHWEST ENGINEERING WORKS, Green Bay, Wis., is constructing additions to increase its floor space 40,000 square feet which will enlarge capacity more than 50 per cent. It is a producer of crawler cranes.

* * *

O F. MITCHELL CO., Center and Jefferson streets, Springfield, O., is eliminating its sheet metal job department and is concentrating on production of metal signs of various types. The company recently has tripled capacity of its plant.

* * *

AMERICAN RADIATOR CO., Springfield, O., has completed reequipment of its toolroom and has installed equipment for the manufacture of oil condensers, production of which is carried on exclusively at the Springfield plant. This line of production has increased considerably and calls for larger facilities.

* * *

MISSOURI-ILLINOIS BRIDGE CO. has been incorporated at St. Louis to build a vehicular toll bridge over the Mississippi river at Louisiana, Mo., to connect the highway systems of the two states. Work will be started this fall. Lloyd C. Stark is president of the company, W. R. Compton, St. Louis, treasurer and T. S. McPheeters secretary.

* * *

FAULTLESS CASTER CO., Evansville, Ind., announces establishment of a branch plant at Stratford, Ont., to serve Canadian users of its products. The plant of three stories, with power plant and offices. Production has been started in a small way and will be increased as dies for some 7000 styles of casters can be made at the Evansville plant.

* * *

BAYSIDE IRON WORKS, Everett, Wash., has amended its articles of incorporation with $100 000 capital in anticipation of the proposed merger of that company with the United Steel Co., Lowell, Wash. The consolidation is to be completed shortly. C. J. Whitney is president and G. W. Mumaw secretary and treasurer of the Bayside Iron Works.

* * *

STANDARD FOUNDRY CO., Racine, Wis., manufacturer of automobile cylinder castings, is building additions to double its floor space. A foundry unit 110 x 220 feet is under construction, served by a new core room recently completed. The present foundry building will be used as a cleaning room. The company is operating under lease the foundry of the Case Plow Works, Inc., in addition to its own plant.

* * *

DAHL-NILES CO., Springfield, O., has bought the plant and business of the Springfield Finished Castings Co. and will engage in the production of service delivery trucks, and metal products. Conrad Dahl is president, Ralph E. Mills vice president, L. R. Niles secretary and general manager and Grover Ilgen production manager. The company will continue its jobbing work for the metal industry.

* * *

McCANN-HARRISON CORP. Cleveland, has taken the contract for building and installing ovens, conveyors and direct oil-fired heating and ventilating systems for the high temperature enameling plant of the General Motors Corp., Oakland, near Pontiac, Mich.; similar equipment for the Chrysler Corp., Dayton, O.; direct oil-fired heaters for burn-off ovens for Dodge Bros. Motor Co., Detroit; complete oil-fired heating system for two new body ovens for the Cleveland Automobile Co., Cleveland, to be installed in its new extension.

* * *

WALTER-WALLINGFORD & CO., Cincinnati, O., whose Chicago office until July 1 was in the McCormick building, has reopened an office at 1442 Straus building, 310 South Michigan avenue. The office is in charge of T. L. Wilson, assisted by E. R. Staat and B. A. Patch. Mr. Wilson formerly was with South Works of the Illinois Steel Co. at Chicago and for 8 years has been salesman and resident manager for Hickman, Williams & Co. at Chicago. Mr. Staat has been salesman and traffic manager for the same company for 20 years and Mr. Patch salesman for several years.

* * *

WELLMAN-SEAVER-MORGAN CO., Cleveland, recently closed contracts for three mechanical gas producers with buildings, dust catchers and flue systems for export to Japan with Thornhill & Anderson; one mechanical gas producer with dust catcher with the Hemingway Glass Co.; 16 mechanical gas producers with the Bethlehem Steel Co. for installation at the Lackawanna plant, seven for the Sparrows Point plant and six for the Steelton plant; four low-type open-hearth charging machines with the Carnegie Steel Co. for installation at the Duquesne works; one crane-type slab charging machine with the Lukens Steel Co.; one electric mine hoist with the American Smelting & Refining Co.; two shear tables with the Carnegie Steel Co. for installation at the Homestead works; one 7½-ton magnet handling gantry crane with the Toledo Furnace Co.; one 60-foot revolving car dumper with the Semet-Solvay Co.; one 50-foot rolling-type car dumper with the Florida Portland Cement Co.; and one sintering machine with the Republic Iron & Steel Co. These sales bring the total for gas producers to 58 for the first eight months of 1926 and to 210 since the present type was placed on the market in 1923.

Various means that have been undertaken for state control of wage

payments, and different classes of evil sought to be remedied, are set forth in Bulletin No. 408, recently published by the bureau of labor statistics, Washington.

Call Off Strike, for City's Economic Welfare

After a six months strike, union painters, glaziers and paperhangers in Cleveland voted unanimously to return to work last week at the same hourly rate, $1.25, they received when they quit. They demanded $1.37½. They will work five and a half days a week, as before, though they wanted only five days with the higher wage.

A remarkable part of the settlement was a statement by the union's officers that the strike was called off in the interest of public welfare; that six months ago the employers made offers of $1.30 an hour, but for the economic good of the city the strikers would return at $1.25. Cleveland building trades unions lost a strike last spring when capitalists refused to advance money for any building construction attempted at the wage rates they demanded.

Announces Examinations

United States Civil Service commission, Washington, announces competitive examinations for positions of junior physicist and junior patent examiner. Applications must be on file at the office of the commission not later than Oct. 9. Applicants will be notified subsequently of the dates of examination. Entrance salary for each position is $1860 a year.

Industrial Business Changes

WEBSTER MFG. CO., Chicago, manufacturer of elevating, conveying and power transmission machinery, has purchased some of the Chicago property of the Weller Mfg. Co., of that city, also a manufacturer of conveying and elevating equipment. Purchase of the Chicago plant gives the Webster company plants in four cities, at Tiffin, O., Toronto Ont., Michigan City, Ind., and Chicago.

* * *

New Era Mfg. Co., Kalamazoo, Mich., nonferrous products, has changed its name to Durametallic Corp.

* * *

Acme Stamping & Brass Works, Zeeland, Mich., nonferrous castings, has changed its name to West Michigan Brass Co.

* * *

Lester Machinery & Supply Co., Indianapolis, Ind., has established its headquarters at 1116 East Georgia street.

* * *

Beaver Machine & Tool Co., Syracuse, N. Y., has changed its name to Beaver Machine & Die Casting Corp.

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Mechanics Tool & Supply Co., Indianapolis, Ind., has established headquarters at 15 Kentucky avenue.

* * *

Offices of the Montgomery Iron & Steel Co., Frankford, Philadelphia, have been moved from 918 West Berks street to 2500 Duncan street. The plant will be removed to the new location during the next few weeks, without interrupting production. W. Nelson Mayhew and Samuel Frank head the company.

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Nordmark Mfg. Co., 524 Butterworth avenue, Grand Rapids, Mich., stampings, has changed its name to Nordmark Engineering & Mfg. Co.

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Atlas Sheet Metal Works, Woonsocket, R. I., Gustave T. Kollen president, has removed to larger quarters at 828 Eddy street.

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Kuhlman Electric Co., Bay City, Mich., has appointed H. F. Darby Jr., 1700 Walnut street, Philadelphia, direct factory representative in that district.

* * *

Pressed Metals of America Inc., Port Huron, Mich., has been organized to take over the American Bushings Corp., Port Huron, Mich., and the Pressed Metals Co. of Canada, Ltd.

* * *

Abram Cement Tool Co., Detroit, manufacturer of cement tools and cement block machines, has moved from 3818 Grand River avenue to 2300 Michigan avenue, at Fiftieth street.

* * *

Hausman & Wimmer Co., Pittsburgh, dealer in iron and steel scrap, has opened a branch office at 1133 Book building, Detroit, in charge of Fred W. Wimmer and Herman Golanty.

* * *

Campbell Wire Specialty Works, South Bend, Ind., will move its plant to Crawfordsville, Ind., where it will occupy the buildings formerly used by the H. & D. Shock Absorber Co.

* * *

Marshall & Huschart Machinery Co., Chicago, is located in its new quarters, 571 West Washington boulevard, at Jefferson street, Chicago. The company formerly was at 17 South Jefferson street.

* * *

Unit Parts Rochester Corp., Rochester, N. Y., has been formed to unite the F. Dean Russell Co. and the Miller-Babcock Spring Service Co., Rochester, manufacturers of automotive equipment.

* * *

Consolidated Expanded Metal Companies, Braddock, Pa., are moving to their new plant at Beach Bottom, W. Va. Offices will be established in the Steelcrete building, Wheeling, W. Va.

* * *

Bilodeau Ball Bearing Works, Boston, has moved from its former location at 26 Cambria street to 92 Brookline avenue. It will start shortly the manufacture of a new line of ball bearings.

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National Mfg. Co. of Indiana, Indianapolis, Ind., has sold its property and has gone out of business. The American Air Cooler Co. purchased the property. George W. Jenks is general manager.

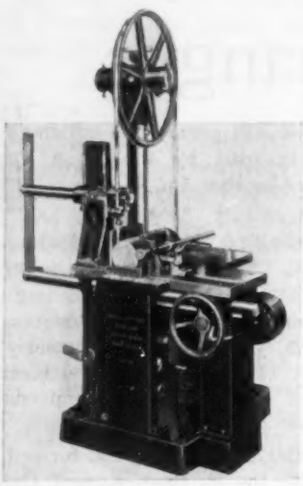
* * *

Charles A. Day, New York sales agent for Edward T. Edwards, Columbia, Pa., merchant and concrete reinforcing steel bars, has moved his headquarters from 30 Church street to 25 Church street, that city.

Band Saw Features Gravity Feed

No. 140

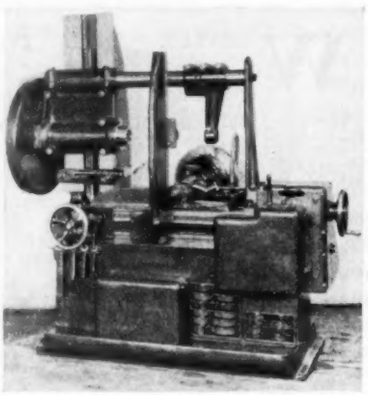
A new metal-cutting band saw has been placed on the market by E. C. Atkins & Co., Indianapolis, designed for cutting shafting, pipe, rails, structural shapes, etc. The machine is equipped with direct motor drive through a 3-speed gear box; all gears run in oil and all moving parts have roller or ball bearings. The saw is fed into the material by gravity, the weight on the rack determining the pressure of the blade. Saw blade runs between roller bearings and is tensioned by a handwheel on top of the column. This tool is claimed to cut machine steel at a rate of 2 square inches per minute and tool steel at 1½ square inches per minute; it will accommodate work up to 12 x 18 inches end area. The table is 28 inches from the floor and measures 13 x 32 inches; height over all is 74 inches. The machine weighs 1500 pounds and requires a floor space 36 x 50 inches. All parts with exception of the motor are exposed and easily accessible for cleaning. The saw removes a kerf of 1/40,000-inch and requires a ¾-horsepower motor for operation.



Gear Cutter Machines Heavy Work

No. 142

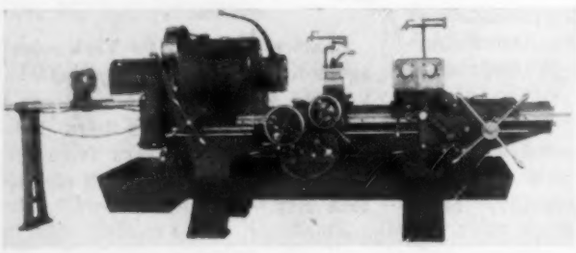
Brown & Sharpe Mfg. Co., Providence, R. I., has redesigned its No. 4 automatic gear cutting machine and added several new features. The work spindle slide has been made heavier and equipped with a solid steel overarm which clears gears to 19⅞ inches in diameter. The arm carries a work support head, with an adjustable center which supports the outer end of the work arbor and a device for relocating the head after once having been centered. The overarm is further supported at its outer end by a heavy vertical brace securely fastened to the bed of the machine and to the feed case. The work spindle slide has been made heavier, having wider and heavier strap and gib; upright ways of the bed have been strengthened. The feed screw operating the cutter slide has been increased in diameter to give greater durability. Index worm shaft also has been enlarged and provided with a heavier bracket. To furnish a means of compensation for wear, the outer bearing of the cutter spindle has a tapered bronze bushing.



Turret Has New Split-Ring Binder

No. 141

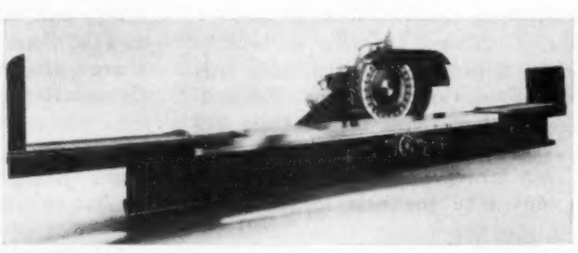
Foster Machine Co., Elkhart, Ind., has placed on the market recently an improved universal turret lathe with several new features. Heavy-duty multiple disk clutches, operating in oil, control the forward and reverse speeds of the spindle. The power rapid traverse unit on the turret slide is equipped with similar clutches. A heavy-duty ball thrust bearing carries the thrust of the spindle. Specially featured is the split-ring turret binder, which entirely surrounds the turret and clamps on a ledge, bringing the clamping action directly under the tools in action. The swing is 22 inches over the bed and 13½ inches over the cross slide. Round bar capacity through the automatic chuck is 3¼ inches; longitudinal feeds of carriage and turret slide are 47 inches and 44 inches respectively. Maximum distance from turret face to spindle nose is 54 inches. Shafts carrying sliding gears are splined and all sliding keys are eliminated; all shafts are of heat treated nickel-chrome steel. Spindle is of forged steel, heat treated and ground to size.



Face Grinder Is Unusually Large

No. 143

Diamond Machine Co., Providence, R. I., has developed and built what is said to be one of the largest face grinders ever produced. The machine is designed primarily for grinding railroad frogs, and is operated by a 75-horsepower motor through silent chain drive. The bed is 336 inches long, and the table measures 36 x 258 inches. Platen is 36 x 200 inches with seven T-slots for ¾-inch bolts. Spindle is 9 inches in diameter with split phosphor-bronze bushings; ball thrust bearings and threaded collars take up end play. Table drive gears are of cut steel and rack gear has 2¼-inch face. Cross feed from front to rear operates by hand while table traverse is effected either by hand or power controlled front and back. The wheel chuck holds 24 abrasive blocks 7¼ inches deep; over 5 inches of the blocks can be used before renewal. The water pump supplies 100 gallons per minute. Wheel speed is 215 revolutions per minute and the table travels a maximum of 30 feet per minute. The grinder accepts work up to 198 inches in length and 42 inches high.



Buyers Centering Interest in Coming Shows

(*Continued from Page* 578)

date. With these three shows pretty well distributed geographically, the maximum number of equipment users will be able to see and inspect the most modern metal cutting and fabricating equipment which can be purchased today.

The New Haven exhibition will attract buyers in all the New England territory, while the other two exhibitions both have national appeal, the membership of the sponsoring bodies representing all states where metallurgical industries are located. One of the chief advantages of large exhibitions, such as these, is that prospective purchasers can see a maximum number of units in a minimum of time with these units operating under as near service conditions as can be obtained.

A number of manufacturers have developed new machines and new models which will be displayed for the first time at one or more of the forthcoming shows. Several of these machines are described in this issue of the machine tool digest. One of the units making its first appearance will be the milling machine described on these pages as No. 138. It is manufactured by Kearney & Trecker Corp. and in many respects is similar to a larger miller described in the June 3 issue of IRON TRADE REVIEW. This manufacturer has just announced that from now on all models will be designed primarily for individual motor drive. In the past, belt-driven types have been the standard but design was such that motor drive could be added. In the future, the motor-driven machine will constitute the standard, which can be modified to supply belt-drive to customers so choosing.

Turret Lathes Improved

Two new turret lathes have just been announced, one of these being built by the Jones & Lamson Machine Co. It is described as No. 139 in the accompanying digest. This tool can be used as either a bar machine or as a chucking lathe. As the former, it will handle bar work 4 inches in diameter and 34 inches long; as the latter it is equipped with a 17-inch chuck and has a swing of 21 inches on centers and a swing over the ways of 17½ inches. The headstock of the bar machine has been redesigned to add to the spindle capacity, as well as to the rigidity and pulling power of the lathe.

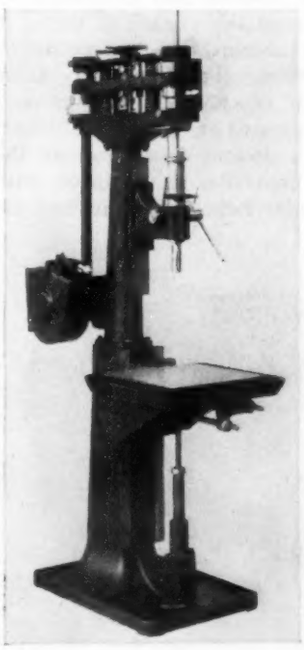
Foster Machine Co. is the designer of the other turret lathe, which is described as No. 141. This machine is completely redesigned from an earlier model and incorporates a number of new and improved features.. It swings 22 inches over the bed and 13½ inches over the cross slide. Round bar capacity through the automatic chuck is 3¼ inches. A feature of the lathe is the split-ring type turret binder. This device surrounds the turret and clamps on a ledge almost equal to the latter, thus bringing the clamping action almost directly under the tools in action. To increase capacity, the bed has been lengthened 12 inches.

Recent improvements in design have been made on a standard driving box borer and facer built by the Bullard Machine Tool Co. and three modifications are described as No. 148. Not only has the tool been strengthened materially to permit heavier cuts but adaptability to various lengths of boxes has been increased. The banjo-type main head and boring bar has been replaced with a cast steel main slide of extra length designed to clamp and support a heavy steel boring bar of sufficient length to accommodate boxes up to 23 inches. Standard

High-Speed Drill Is Multispindle

No. 144

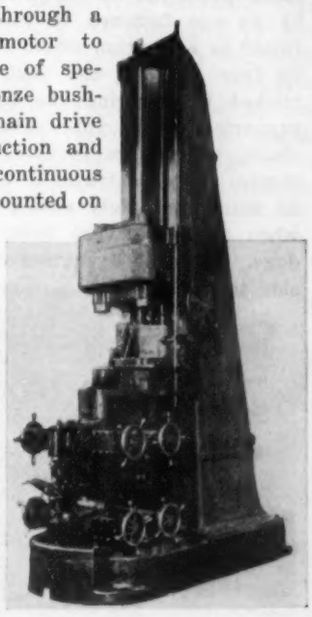
Fosdick Machine Tool Co., Cincinnati, has placed recently on the market a new, high-speed, ball-bearing drill, equipped with from one to six spindles, to suit user's requirements and furnished in either 16 or 24-inch size. Capacity of the machine for drilling is ¾-inch and tapping ¼-inch. The drill is equipped with either motor or belt drive; belt-driven machine has tight and loose pulley, swiveling belt guard and shifter; the drive is through spiral gears running in oil. The head is adjustable on the column and can be clamped rigidly in position. Spindle is of high-grade steel; the adjustable spindle collar, mounted on the sleeve, can be set to disengage the feed at any desired depth. Table is adjustable on the pedestal by means of telescopic screws and can be elevated or lowered by a conveniently placed lever. A liberal oil channel is provided for lubrication.



Bores Two Bronze Ingots at Once

No. 145

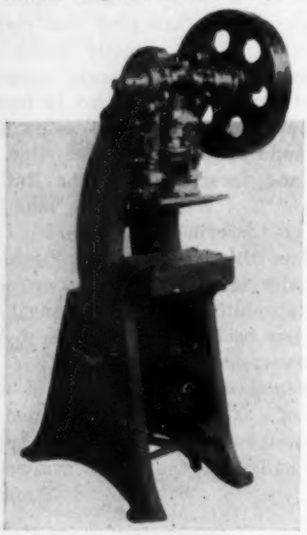
Hoefer Mfg. Co., Freeport, Ill., has designed a motor-driven machine for simultaneous boring of two cast bronze ingots. Machine consists essentially of a base, column, two spindle heads and a rotating trunion with work-holding fixtures. Base contains the coolant pump, while the section around the trunion is arranged to receive chips. The column is of heavy channel section, with three cross ribs to prevent distortion tendencies. Power is transmitted through a beveled pinion from motor to driveshaft. Spindles are of special alloy steel, with bronze bushings and ball thrusts; main drive gear is of quill construction and the head operates in continuous oil bath. Feed box is mounted on the overhanging arm, with feed control obtained through a lever on the front of the machine. Head stops automatically at the bottom of the down stroke and at the top of the reverse stroke. The 4 work-holding fixtures on the rotating trunion each consist of 4 hardened steel V's which automatically center the work.



Press Has Non-Repeatable Clutch

No. 146

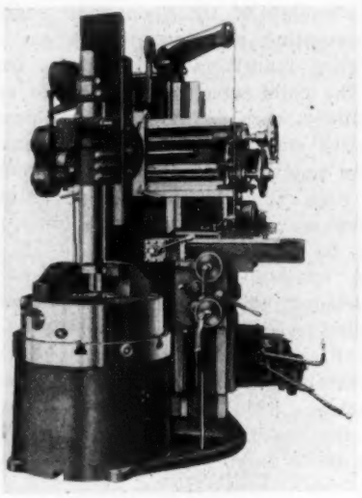
A new line of reclinable power presses has been brought out by Zeh & Hahneman Co., Newark, N. J., particularly designed to afford high die spaces. This line of presses is equipped with clutches of the nonrepeatable single stroke type, thus affording an important safety factor. If a press is used for continuous work, however, the clutch can be adjusted at once. Flywheel is of the disk type; lugs for tie rods are provided on the larger presses, rendering them suitable for heavy stamping work. All sizes recline 40 degrees, and since the frame is pivoted in front, the working height remains constant at all angles; frame is always safely supported by the elevator screw. Each press is tested for an overload of 50 per cent, and if desired, will be supplied with a two-lever operating device, instead of foot treadle and finger guard. Finger guard decends before the clutch operates, and the treadle is protected from falling pieces by a screen. Squaring the size number of each press gives its pressure in tons.



Box Borer Handles Large Pieces

No. 148

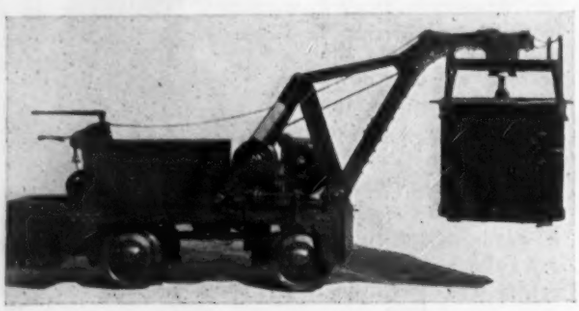
Bullard Machine Tool Co., Bridgeport, Conn., has made recent improvements in the design of its standard driving box borer and facer, increasing its adaptability for various lengths of boxes. The "banjo type" main head and boring bar has been replaced by an extra long cast steel main slide supporting a boring bar long enough to accommodate boxes up to 23 inches. Cutting tool adjustment is made by hand crank through worm and gear to a rack in the bar. Various box diameters are obtained by bringing main head, bar and tools close to the work and reading dimensions directly from the scale and micrometer dials on the feed rods. The machine is equipped with a heavy two-jaw self-centering chuck and a graduated micrometer cross adjustment for boring reliefs. The chuck is fitted for locating the box accurately on the vertical axis and for holding the work.



Charger Features Unusual Bucket

No. 147

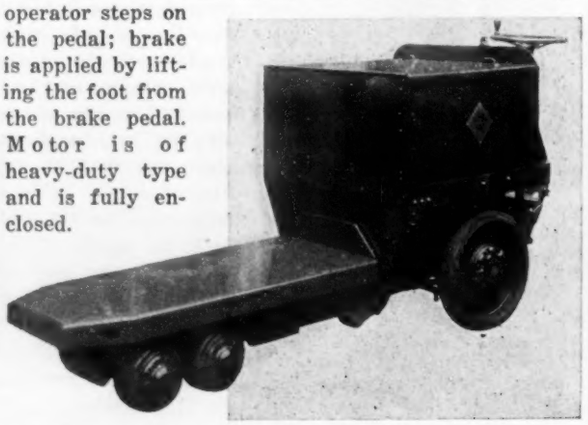
Baker-Raulang Co., Cleveland, has designed a new crane-type electric truck for cupola charging. The truck is assembled from standard parts and the motors are driven by a 48-volt storage battery contained in a large steel box on the back of the truck. The bucket is composed of two sections, a circular shell and a conical bottom which fits against the lower rim of the shell, point up. When loaded, bucket is picked up by an eye fastened to the point of the cone and raised to a position where the bucket rim is engaged by four dogs on the yoke. Discharging is accomplished by lowering the bottom while the shell is supported by the yoke. Due to the former's conical shape, the charge is evenly distributed around the cupola. Upward travel of the hoist is protected by an automatic safety switch which cuts off the power when the bucket has been raised 1 inch above the dogs. Boom is strengthened by a steel plate on the side toward the fire.



Lift Truck Has Strong Platform

No. 149

Elwell-Parker Electric Co., Cleveland, has designed a new model 5-ton electric lift truck of especially rugged construction, intended principally for service in iron and steel plants and warehouses. The load platform is of heavy steel plate, 27½ x 60 inches, with edges bent down into a deep flange and welded at the corners. Lifting unit is especially powerful and is located between the load platform and the propelling unit. A leading feature is the tandem axle by means of which all 4 wheels are steered simultaneously. Axles are of cast steel, steering knuckles drop forged, and bushings are pressure lubricated and renewable. Steering is accomplished by a 16-inch handwheel at the left of the operator. Controller is equipped with a reverse drum that remains locked in off position till operator steps on the pedal; brake is applied by lifting the foot from the brake pedal. Motor is of heavy-duty type and is fully enclosed.



features include a constant speed drive pulley with multiple disk clutch and brake for starting and stopping; sliding gear speed and feed changes; centralized control; and power rapid traverse for both vertical and cross movement of the main head.

The vertical boring machine designed by the Hoefer Mfg. Co. and described as No. 145 is a special machine intended for a single purpose. In making seamless tubing, particularly nonferrous, the metal is cast in ingots with a core which must be bored out. The machine shown was built for machining 2½-inch holes in cast bronze ingots 40 inches long. It consists essentially of a base, column, two-spindle head and rotating trunnion with work holding fixtures.

An improved design of automatic gear cutting machine has just been announced by Brown & Sharpe Mfg. Co. Chief among the new features of the unit, which is described as No. 142, is the means for supporting the gear blanks. The work spindle slide has been made heavier and equipped with a solid steel overarm which clears gears up to 19⅞-inch diameter.

Fosdick Machine Tool Co. has just added to its line of drilling machinery two sizes of high-speed, ball-bearing sensitive drills. As described in No. 144, they are built in single and multiple spindle types, with or without power feed, motor drive, pump and fittings and tapping attachments. One machine is of the bench type with 1 to 4 spindles and the other of the pedestal type with 1 to 6 spindles. Both are made 16 and 24-inch sizes with ¾-inch drilling and ¼-inch tapping capacity.

Grinder Unusually Heavy

What is claimed to be the largest and heaviest face grinder ever built is described as No. 143 in the accompanying digest. This machine, which was constructed by the Diamond Machine Co., was designed primarily for grinding railroad frogs but it can be used for any similar grinding where flat surfaces are required. Using this machine it is said that the time for grinding a frog has been cut from 2 and 3 hours to 30 minutes. A 75-horsepower motor is required for its operation. Some idea of the work done by the machine is gained from the information that the lubricant used on the cutting surface to cool the work and lubricate the wheel amounts to 100 gallons a minute.

The grinder handles work up to 198 inches long and 42 inches high. The wheel operates at a speed of 215 revolutions per minute and the table at a maximum of 30 feet per minute. Both hand and automatic crossfeed are available. The water supply tank has a capacity of 100 gallons and is equipped with a settling tank holding 40 gallons. A special sectional wheel holds 24 abrasive blocks, each of which is 7¼ inches deep and 2 or 3 inches thick.

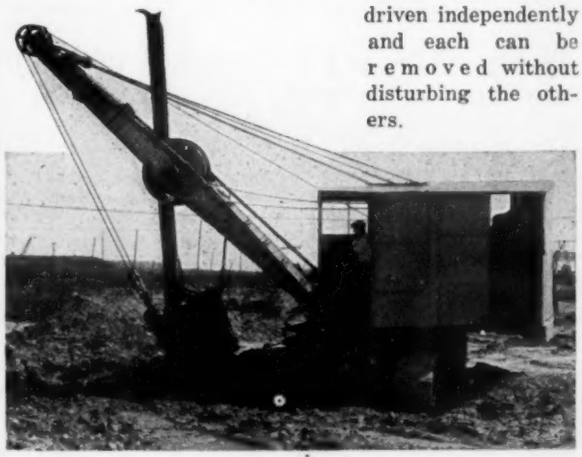
Two new metalcutting saws introduced during the month are described as No. 140 and No. 151. The first is of the bandsaw type and is built by E. C. Atkins & Co., while the other is of the circular cut-off type and is built by the Hunter Saw & Machine Co. The bandsaw is redesigned from a previous model and is claimed to be more efficient in operation. It is claimed to cut steel at the rate of 2 square inches per minute and tool steel at 1½ square inches per mintes. Capacity of the tool is 12 x 18 inches.

The cut-off saw is designed principally for the rapid cutting-off, mitering and coping of the new lightweight beams and similar sections, It is said that a 12-inch junior beam can be cut in 5 seconds and a 6-inch beam in 3 seconds. A 24-inch diameter toothed saw belt-driven from a 15-horsepower motor does the cutting.

Power Shovel Functions as Crane

No. 150

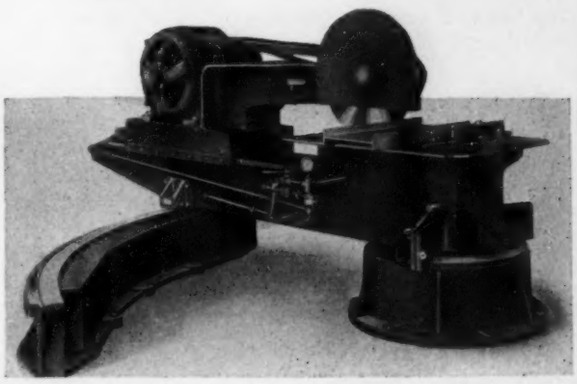
Thew Shovel Co., Lorain, O., recently has placed on the market a new power shovel of 1¼-yard capacity, featuring great range and adaptability with small size and weight. The machine can be equipped with either motor or gasoline engine drive and can be used as a shovel, crane, clam or drag. The shovel boom has been designed with the shipper shaft in a new position, to facilitate deep digging; the boom mechanism comprises only shaft, pinion and driving sprocket. Machinery frame, main bed and heavy forward struts, connected by accurately fitted pins of large diameter, give a rigid triangular structure furnishing strength sufficient, it is said, for a 20-ton crane. The three main shafts are driven independently and each can be removed without disturbing the others.



Machine Saw Swings to Any Angle

No. 151

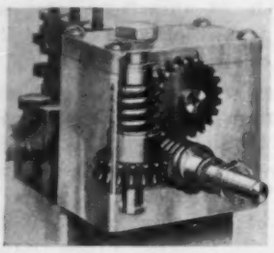
Hunter Saw & Machine Co., Pittsburgh, has developed a high-speed metal cut-off saw designed especially for the rapid cutting off, mitering and coping of junior beams, stair stringers, etc. The machine is mounted on a turntable which permits swinging the saw to any angle desired. Saw is 24 inches in diameter, belt driven directly off the motor, while the power feed is of the motor-driven hydraulic type; both drive and feed motors are controlled by push buttons. The saw arbor is mounted on double-row deep-groove ball bearings in oil-tight dust-proof housings. Belt and saw blade are protected by steel guards; belt guard can be removed and an endless belt set on without dismantling other parts of the machine. An adjusting screw is provided for tensioning the belt.



Speed Reducer Is Fully Enclosed

No. 152

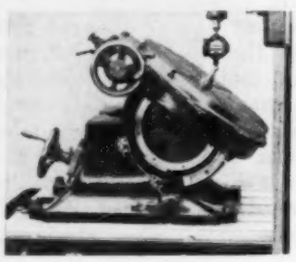
A series of speed reducers for fractional horsepower motors has been designed by Hills-McCanna Co., Chicago, giving reductions of 20-1, 30-1, 50-1, 100-1, 200-1. and 400-1. Standard hardened steel worms run against bronze worm gears, the whole mechanism operating in a grease packed dust-proof case measuring 4 x 2½ x 4 inches. Reducer connects with the motor shaft through a flexible coupling.



Introduces Unique Boring Tables

No. 153

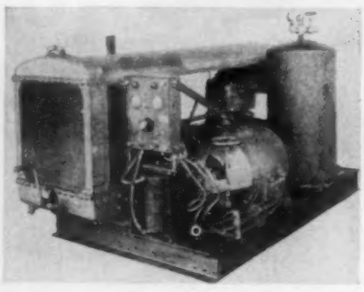
R. Y. Ferner Co., Investment building, Washington, has introduced on the market two sizes of universal circular tables manufactured by the Societe Genevoise, Geneva, Switzerland, for use with high precision locating and jig boring machines made by the same company. The smaller of these, with a dividing table diameter of 11¾ inches, is for use on its No. 4 machine; the larger for No. 5 and No. 6.



Combination Machine Is Portable

No. 154

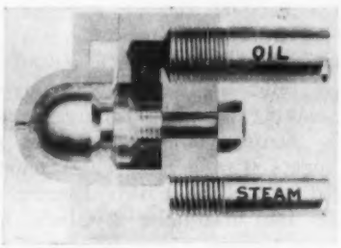
A combination air compressor and arc welder driven by a gas engine and mounted on a single base, has been placed on the market by Schramm Inc., West Chester, Pa. The welding outfit is manufactured by General Electric Co. Complete equipment may be mounted on a standard 2-ton truck or can be made portable by adding steel or rubber-tired wheels. The engine is a 24-horsepower unit of 800 revolutions per minute, and may be operated independently of either compressor or welding generator. Compressor is a 2-cylinder water-cooled machine with a capacity of 120 cubic feet per minute and equipped with an automatic unloading device; air tank is 16 inches in diameter and 42 inches high. The welding equipment consists of a belt-driven arc welder with an idler pulley for belt tightening. Either machine may be connected to the motor as desired by a 12-inch clutch coupling. This combination outfit is expected to be of great use in field work. The air compressor can be used to drive drills, grinders and chipping hammers, while the welder operates on both light and heavy-gage steel. The entire outfit measures approximately 8½ x 6 x 4 feet, and weighs 4000 pounds.



Oil Burner Is Accurately Fitted

No. 155

A new oil burner, using but 1.3 per cent steam and adapted to any type furnace has been placed on the market by F. Beers & Co., Federal Trust building, Newark, N. J. Four inside steam jets are employed, acting at right angles to four oil jets. Burner head is made in two sections of high-grade cast iron, accurately machined and bolted together.



New Work Stand Has Several Uses

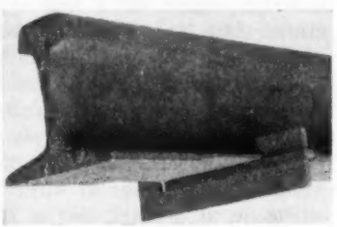
No. 156

Tomkins-Johnson Co., Jackson, Mich., has developed a universal work stand which has many uses. The stand is designed for holding die blocks, automobile fenders, doors, radiators, etc., while working on them. The direction adjustment functions through a ball and socket joint. A shelf 12 inches wide is built around the stand at a convenient height, which allows tools to be kept at hand.

Rail Anchor Is Fully Adjustable

No. 157

Bethlehem Steel Co., Bethlehem, Pa., has brought out a new rail anchor, numbering among its features sufficient adjustment to fit rails in any condition and an original design which prevents the two parts of the anchor from becoming separated. The device consists of a heavy flat yoke which hooks over the base of the rail and a heavy key which provides the wedging action.



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Hunter Saw & Machine Co.	9/2
Jeffrey Mfg. Co.	8/5
Jones & Lamson Machine Co.	9/2
Kearney & Trecker Corp.	9/2
Kent Machine Co.	8/5
McMyler-Interstate Co.	8/5
Milburn, Alexander Co.	8/5
National Acme Co.	7/1
National Engineering Co.	7/1
Niles-Bement-Pond Co.	7/1
No-Towel Co.	8/5
Ohio Injector Co.	7/1
Oilgear Co.	7/1
Reed-Prentice Co.	7/1
Riehle Bros. Testing Machine Co.	7/1
Ryerson, Joseph, & Son Inc.	8/5
Schramm, Inc.	9/2
Scully-Jones & Co.	8/5
Springfield Mfg. Co.	8/5
Tomkins-Johnson Co.	9/2
Thew Shovel Co.	9/2
Tri-Lok Co.	8/5
Uehling Instrument Co.	8/5
Van Norman Machine Tool Co.	7/1
Vulcan Iron Works	7/1
Williams Gage Co.	7/1
Zeh & Hahneman Co.	9/2

Machine Tools Introduced in 1926 (By Products)

Boring Mills

No.		Issue
153.	Boring tables	9/2
145.	Bronze ingot borer	9/2
148.	Driving box borer	9/2
125.	Side head boring mill	8/5

Drilling Machines

No.		Issue
144.	High-speed drill	9/2
106.	Multiple spindle drill	7/1
111.	Portable electric drill	7/1
132.	Tapping machine	8/5

Grinding Machines

129.	Disk grinder	8/5
120.	Face grinder	8/5
143.	Face grinder	9/2
104.	Floor grinder	7/1

Lathes and Automatics

119.	Bolt threader	8/5
124.	Bolt threader	8/5
115.	Quartering lathe	7/1
139.	Turret lathe	9/2
141.	Turret lathe	9/2
102.	Vertical turret lathe	7/1

Material Handling Equipment

103.	Crane truck	7/1
147.	Cupola charg	9/2
133.	Electric hoist	8/5
149.	Electric lift truck	9/2
105.	Gasoline locomotive	7/1
150.	Power shovel	9/2

Metal Cutting Saws

140.	Band saw	9/2
151.	Cut-off saw	9/2

Milling Machines

107.	Die sinker	7/1
142.	Gear cutter	9/2
142.	Milling machine	9/2

Pipe Machines

121.	Threading machine	8/5

Punches, Presses, etc.

109.	Bearing casting press	7/1
146.	Power press	9/2
123.	Single-end punch	8/5

Small Tools

116.	Collapsible tap	7/1
134.	Electric drill	8/5
137.	Quick-change chuck	8/5
136.	Pneumatic grinder	8/5
113.	Reamer drive	7/1

Welding Equipment

154.	Combination welder	9/2
122.	Flue welder	8/5

Miscellaneous

128.	Gas filter	8/5
130.	Hand dryer	8/5
117.	Hand valve	7/1
112.	Motor back gear	7/1
155.	Oil burner	9/2
126.	Portable loader	8/5
118.	Pump valve	7/1
157.	Rail anchor	9/2
114.	Sand mixer	7/1
110.	Speed reducer	7/1
152.	Speed reducer	9/2
135.	Spray gun	8/5
127.	Steel grating	8/5
131.	Switch stand	8/5
108.	Testing machine	7/1
156.	Work stand	9/2

To conform with indexing of IRON TRADE REVIEW *each half year, the machine tool index for the first half of* 1926 *was closed in June and beginning with July* 1 *issue a new index is carried forward until the close of the year. The consecutive system of numbering, however, will be carried out throughout the entire year in order that a recapitulation may be published next January. The machine tool index for the first half of* 1926 *will be found on Page* 1479 *of the June* 3 *issue.*

Annealing Sheet Steel at High Temperatures

(*Concluded from Page* 571)

able to control every governing factor. The automatic temperature controlling device accompanying the new furnace assures a minimum consumption of fuel and the automatic recording radiation pyrometer gives a record of the maximum temperature of each sheet.

When annealing sheets, other than direct from mill, under this process, the first operation is the feeding of sheets to the conveyor. A pile of sheets should always be on each side of conveyor, in order to dispense with delay of lifting a fresh pile. This will keep the furnace in constant operation, eliminating waste of fuel. If annealing sheets direct from the mill, the automatic control reduces the flow of fuel during idle periods. In either case sheets should be fed to the furnace at a uniform rate.

The progress of the sheets is first through the preheating zone where they are gradually heated as they travel against the flow of flame or hot gasses; then into and through the heating zone, where they attain their highest temperature; then under a semiseal into the cooling zone, where they are cooled down under inert gas to about 1400 degrees Fahr. then into the air, on the conveyor, without any danger of raising the scale, and meanwhile cooling rapidly; thence through roller leveler (now are down to black or dark red heat); piled immediately in packs of stated heights; and allowed to cool to room temperature.

These steps are believed to be essenial for the following reasons:

In the process of rolling sheets the grains or crystals of the metal are crushed, causing the hot rolled sheet to be imparted a hard and brittle texture.

Heating to high temperatures restores this distorted metal to its natural toughness by reforming the grain. Cooling to 1400 degrees Fahr. in the furnaces under influence of inert gas avoids the scaling that would take place if the sheets were discharged from the heating zone into free air.

When the sheets are roller-leveled while too hot, naturally they do not stay level. Also if sheets are piled while too hot, the grains of the metal will grow and the steel will be too soft. This accounts for a long conveyor after the furnace.

A furnace 70 feet long will produce 100 to 120 tons of annealed stock in 24 hours.

Roads Suspend Schedules

Washington, Aug. 31.—Interstate commerce commission has announced that certain railroad schedules have been suspended until Dec. 28 which propose to increase the class rates between Gary, Ind., and points in Indiana and Michigan, when routed via the Elgin, Joliet & Eastern railway.

What Exhibitors Will Display at Chicago Steel Exposition

(*Continued from Page* 562)

drilling and tapping heads. The company will be represented by E. J. Kingsbury and Gunnar Swahnberg.

KLOSTER STEEL CORP., Chicago—Swedish steel including razor blade stock, hand saw steel, hot and cold rolled strip, and other specialties, including hollow staybolt steel will be shown. Einar Lindeblad and C. A. Palmgren will be in attendance.

KNIGHT MACHINERY CO., W. B., St. Louis—A vertical milling machine, recently redesigned, will be exhibited in operation. W. B. Knight Jr. and J. M. Davie will represent the company.

KROPP FORGE CO., Chicago—Forged bars, flanges, rivet sets and ring forgings will be shown. C. A. Kropp, R. A. Kropp, C. F. Johnson, D. W. Devine and J. N. Gibson will be in attendance.

LANDIS MACHINE CO., Waynesboro, Pa.—Among the machines shown in operation for this company will be a one-half inch double head leadscrew threading machine equipped with a ¾-inch head; one 6-inch pipe threading and cutting-off machine and automatic die heads and collapsible taps. C. N. Kirkpatrick, R. G. Mumma, M. M. Lutz and H. C. Stevens will be in attendance.

LANDIS TOOL CO., Waynesboro, Pa.—A plain hydraulic grinder with power infeed to wheel-head and a hydraulic crankpin grinder will be shown. R. F. Ingram, S. S. Shoemaker, R. E. Forthman, E. E. Warn and J. L. Welsh will represent the company.

LASALLE TOOL CO., LaSalle, Ill.

LE BLOND, R. K., MACHINE TOOL CO., Cincinnati—Among the tools to be shown in operation by this company are several automatic lathes, a 21-inch and a 30-inch engine lathe, an 11-inch rapid production lathe and a plain cutter grinder. H. C. Pierce and B. Brockman and Charles Carr will represent the company.

LEEDS & NORTHRUP CO., Philadelphia—An electric furnace for steel hardening will be shown in operation as well as a tempering furnace, temperature indicators, records and controllers. The exhibit will be in charge of H. Brewer and G. W. Tall Jr.

LEHMANN MACHINE TOOL CO., St. Louis—A heavy duty, 16-speed geared head lathe complete with standard equipment and improved taper attachment and a motor-driven lathe with motor mounted on the headstock and with remote control starter will be exhibited. Paul Lehmann will represent the company.

LEITZ, E., INC., New York.

LELAND-GIFFORD CO., Worcester, Mass.—Among the machines to be shown in operation are several models of single spindle drills, a single spindle sensitive drilling machine; two-spindle, and three-spindle floor type tapping machines; and other belt or motor driven machines of similar character. Some of these will be operated on a production basis. F. B. Dowd, S. Nikoloff, C. H. James, E. A. Heidinger, E. J. Riordan, W. Fors, J. R. Hoover and A. H. Anderson will be in attendance.

LIBERTY MACHINE TOOL CO., Hamilton, O.—This company will operate a 36 x 36-inch x 12-foot double housing planer with two heads on crossrail and two side heads. The company will be represented by Jewett Milliken, E. H. Wachs and Albert Meyers.

LINDBERG STEEL TREATING CO., Chicago—Photographs and descriptions of plant equipment and methods employed by this company will be shown. A. N. Lindberg, H. E. Lindberg and L. A. Lindberg will be in attendance.

LINK-BELT CO., Chicago—Silent chain drives will be shown in operation by this company, which will be represented by J. S. Watson, G. W. Ostrand, J. S. Holl, Ralph Dyson and H. F. Weber.

LODGE & SHIPLEY MACHINE TOOL CO., Cincinnati—Among the machines to be operated by this company are a 14-inch x 6-foot selective head toolroom lathe with relieving attachment, and a 24-inch x 14-foot selective head engine lathe with power traverse and taper attachment. The company will be represented by J. W. Carrel, H. J. Breitenbach, Fred Schoeffler, R. C. Johnston, Fred Albrecht, T. C. Stephens and J. N. Stephens.

LOGANSPORT MACHINE CO., Logansport, Ind.—Air operated devices including two and three jaw chucks, air cylinders, valves, lubricators, collet chucks, assembly and drilling vises, arbor presses, work ejecting air compressors, etc., will be shown in operation. F. G. Payson will be in charge.

LOSHBOUGH-JORDAN TOOL & MACHINE CO., Elkhart, Ind.

LUDLUM STEEL CO., Watervliet, N. Y.—Tool steels, high speed steels and special alloy steels, rustless and non-corrosive iron and steel and illustrations showing their application to the industry will be shown. The company will be represented by C. B. Templeton, T. H. Nelson, W. J. Fitzgerald, W. L. Weaver, P. E. Floyd, E. L. Hulbren, L. D. Burr, T. C. Sherman, P. R. Thurston, W. Kinsey, J. E. Polhemus, H. I. Askew, Jr., H. W. Spiegel and J. J. Cruice.

McCROSKY TOOL CORP., Meadville, Pa.—Tools to be demonstrated by this company include quick change chucks and collets on various machine tools; adjustable reamers, turrets; and self-centering frictionless steady rests. The company will be represented by F. I. Fisher, A. J. Moore, I. C. Cameron, C. M. Sutton, R. W. Thomas and W. J. Greenleaf.

McGILL METAL CO., Valparaiso, Ind.—Radial and thrust ball bearings will be exhibited, as well as several special bearings of unusual design. Modified aluminum bronze die castings also will be shown. The company will be represented by F. R. Schubert, W. E. Brownell, F. L. Robinson, C. Y. Johnson and R. W. Barggren.

MACKINTOSH-HEMPHILL CO., Pittsbugh—Among the products shown will be forming dies for cold working and forming light steel plate; permanent molds for aluminum castings; skelp bending dies; tube mill sizing rolls; roll dies for rolling shovel steel, hoe plate, fork tines, etc.; pugs for seamless tube mills; guides for merchant bar and rod mills; gears; hammer dies; pig machine wheels; drawing rings and aluminum melting pots. J. R. Patterson and J. M. Lewis will represent the company.

MADISON-KIPP CORP., Madison, Wis.—Machine tool lubricators mounted on a single stand and motor driven will be shown in operation. The company will be represented by A. T. Lillegren, J. A. Courter, W. G. Coles and F. R. Clark.

MAHR MFG. CO., Minneapolis—A triple atomizing-type oil burner; individual blowers; industrial furnaces using oil, electricity and gas; and automatic controls will be shown. In attendance will be W. G. Barstow, R. M. Hortvet, B. G. Harmon, C. W. Rudolph and A. E. Stenzel.

MANNING, MAXWELL & MOORE, INC., Chicago—Machines made by nine manufacturers (see accompanying index) will be displayed. Joseph Wainwright and R. S. Dean will represent the company.

MARSHALL & HUSCHART MACHINERY CO., Chicago—Machine tools built by 21 manufacturers which are listed individually will be operated. H. W. Jones, George C. Edwards, Frank Seese, J. R. Porter, George Habicht, Jr., J. G. Klarber, J. R. Lawrence, George R. Ray, H. F. Roberts, A. L. Van Dyck and E. V. Wenzell will be on hand.

METALWOOD MFG. CO., Detroit.

MICHIGAN TOOL CO., Detroit.

MICRO MACHINE CO., Bettendorf, Iowa.

MIDVALE CO., Nicetown, Philadelphia—Heavy finished machine forgings, high speed steel, hardened and ground forged steel rolls and stainless steel will be exhibited. Representatives will be Dr. H. L. Frevert, Stuart Hazlewood, Fred Sager, W. B. Smyth, Harvey Garrett, W. A. Miller, Henry Ziesing and H. E. Rowe.

MOLINE TOOL CO., Moline, Ill.—A 36-inch hole hog drilling machine with special 2-spindle heads will be operated. Wilson P. Hunt, Franklin Johnson, C. R. Rosborough, A. E. Lindberg, H. D. Gentry, W. C. Kuschman, O. R. Reller, W. H. Guthrie and S. L. Brandenburg will represent the company.

MOLYBDENUM CORP. OF AMERICA, Pittsburg—Samples of ferromolybdenum, molybdenite ore and concentrates, ferrotungsten, tungsten concentrates and various steel parts containing molybdenum will be shown. J. W. Wetzenkorn, Clifton Taylor, W. H. Phillips and J. B. Carman will be present.

MONARCH MACHINE TOOL CO., Sidney, O.—A 16-inch x 6-foot geared head tool room lathe, a 20-inch x 10-foot machine of same type and an automatic lathe will be operated. W. E. Whipp and J. A. Raterman will represent the company.

MORSE TWIST DRILL & MACHINE CO., New Bedford, Mass.—High speed and carbon twist drills, reamers, milling cutters, taps dies and special tools will be shown. W. T. Read, F. O. Lincoln, J. G. Barr and R. F. Chase will be in attendance.

MORTON MFG. CO., Muskegon Heights, Mich.

MURCHEY MACHINE & TOOL CO., Detroit—Collapsible taps, self-opening dies and solid adjustable taps will be operated. A. J. Prance, W. C. Beuchner, A. J. Moore, I. Cameron and J. H. Sipchen will attend.

NATIONAL ACME CO., Cleveland—A 1-inch, 5-spindle and a 1¼-inch, 4-spindle automatic screw machine will be demonstrated on typical jobs. A new line of self-opening dies and collapsing taps will be shown for the first time. R. J. Preston, A. E. Drissner, K. H. Crumrine, A. W. Scherer, C. E. Hartley and H. U. Gordon will represent the company.

NATIONAL AUTOMATIC TOOL CO., Richmond, Ind.—New multiple spindle drilling and tapping machines, and universal joints, tap holders and drill holders will be shown. Representatives will be E. D. Frank, R. E. Sterling and S. E. Bergstrom.

NATIONAL ELECTRIC LIGHT ASSOCIATION, Chicago—Photographs of electric heating installations with accompanying operating data and samples of materials treated will be

Convention Committee

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Drake hotel, Chicago

Exposition
E. VON HAMBACH
Boyle Valve Co., Chicago

displayed J. H. Faulkner, J. D. Haynesworth, O. Wilhelmy, and others will attend.

NATIONAL MACHINERY CO., Tiffin, O.—Out of the ordinary forgings to demonstrate the advantages of its heading and forging machines will be shown; represented by F. J. Wawby, C. D. Harmon, K. L. Ernst and D. J. Crowley.

NATIONAL TWIST DRILL & TOOL CO., Detroit—Drills, reamers, hobs, cutters and special tools will be exhibited and parabolic milling cutters will be demonstrated. C. E. Smith, Harry Butler, E. J. Chamberlain, F. A. Green, J. C. Buck, J. S. Fogarty, W. R. Crook, F. G. Wright and George Webster will be in attendance.

NAZEL ENGINEERING & MACHINE WORKS, Philadelphia—An 18-inch slotting machine and air hammer will be operated; represented by J. M. Nazel, C. H. Wackernagel and R. E. Miller.

NEFF KOHLBUSCH & BISSELL, Chicago—Machines and tools manufactured by 14 firms will be operated. L. G. Neff, A. H. Kohlbusch, A. W. Bissell, W. H. Lucas Jr., and W. C. Muller will represent the company.

NEW BRITAIN MACHINE CO., New Britain, Conn.—A 3-spindle automatic air-operated chucking machine on a high production brass job, an automatic chucking machine on valve stem guides and a sextuple automatic bar machine working on nut blanks will be demonstrated. Representatives will be H. H. Pease, E. L. Steinle, H. L. Wilson, T. C. Stirling, Geo. K. Atkinson, Fred Rau, Carl Beiser, Charles Perry and Clifford Hanson.

NIAGARA MACHINE & TOOL WORKS, Buffalo—A straight side single crank press, a power gap squaring shear and an inclinable power press, all arranged for belted motor drive and ball bearing idler for belt will be operated. R. J. Caplin will be in charge.

NILES-BEMENT-POND CO., New York.

NILES TOOL WORKS, Hamilton, O.

NORTON CO., Worcester, Mass.—Among the machines operated will be a universal tool and cutter grinding machine, a surface grinding machine, a wheel drive unit and a 10 x 18-inch special purpose grinder. Grinding wheels refractories and nonslip floors will be exhibited. H. N. Cudworth, M. E. Mattson, H. L. Swainey, C. H. Hill, O. E. Nordstrom, O. A. Knight, H. J. Griffing, W. T. Montague, Hans Wickstrom, G. W. Thomson, H. K. Clark and H. A. Blackborn will attend.

NUTTALL, R. D., CO., Pittsburgh—A large spur-type ring gear and a crusher-bevel gear, both heat treated, will be shown; represented by R. F. Fiske, J. E. Mullen and R. W. Young.

OESTERLEIN MACHINE CO., Cincinnati, O.

OHIO MACHINE TOOL CO., Kenton, O.—A 32-inch shaper will be operated. S. H. Peters will be in charge.

OHIO STEEL FOUNDRY CO., Lima, O.

OILGEAR CO., Milwaukee—Motor-driven broaching machine with broach support and clamping device and a 10-ton motor-driven press with semiautomatic control will be in operation. Represented by W. D. Creider, H. B. Hayden, H. M. Swigart, G. H. Fobian, F. L. Young, Wilfrid Pulver, L. A. Barrett, Walter Ferris and J. P. Ferris.

O. K. TOOL CO INC., Shelton, Conn.—New designs of inserted-tooth milling cutters will be exhibited in operation, as well as new lines of inserted-tooth boring tools and tool bits and holders. Representatives are F. J. Wilson, F. Schroeder, R. R. Weddell and E. Raduhn.

OLIVER INSTRUMENT CO., Adrian, Mich.—A drillpointer, point thinner and die-making machine will be operated. E. C. Oliver will be in charge.

OLSEN, TINIUS, TESTING MACHINE CO., Philadelphia—Will exhibit in operation automatic and autographic universal testing machine and will demonstrate hardness testing machine hand operated and motor driven, ductility testing machines, static-dynamic balancing machines, horizontal and vertical. Represented by T. Y. Olsen, R. B. Lewis, Jacob Lundgren and W. J. Tretch.

OXWELD ACETYLENE CO., New York—New application of the oxyacetylene flame in spot hardening of malleable iron and stelliting will be demonstrated. H. H. Griffith will be in charge.

PARK CHEMICAL CO., Detroit—Will exhibit case hardening compounds, cyanide mixtures, lead pot covering, reheating salts, tempering salts and rubbing compounds for finishing lacquer. Represented by D. W. Bauer, J. C. Thompson, F. W. Faery and J. N. Bourg.

PEERLESS MACHINE CO., Racine, Wis.—A 9-inch universal shaping saw, motor-driven and a 6-inch high-speed metal saw will be shown in operation. A. H. Goetz, Charles Rasmussen and C. A. Schumann will be in attendance.

PELS & CO., HENRY, INC., New York—This company will exhibit in operation a triple combined punch, splitting shearbar, angle and tee cutter, a bar and billet shear, a quadruple combined punch, splitting shear bar, angle and tee cutter, with high punch throat for wide-flange beams. I. Maddaus will be in charge.

PENTON PUBLISHING CO., Cleveland—Will show technical and commercial books and periodicals, dealing with heat treating, forging and other phases. Rest room for those who desire to confer in quiet. Copies of *Daily Metal Trade*, IRON TRADE REVIEW, *The Foundry* and other Penton publications available. Represented by C. J. Stark, H. Cole Estep, J. D. Pease, F. V. Cole, E. L. Shaner, E. F. Ross, F. B. Pletcher, W. W. Maloney, L. C. Pelott, A. L. Klingman, John Henry, W. H. Blair and W. J. Chapman.

PEOPLES GAS LIGHT & COKE CO., Chicago—A working display will be shown of automatic heat-treating machines and quenching tanks, ovens, furnaces, forges, salt baths, burner equipment and blowers. A feature is automatic temperature control and one-valve control combustion systems. Represented by R. C. Guthrie, J. A. Comstock, C. F. Teuber and H. F. Rehfeldt.

PERFECTION TOOL HARDENING CO., Chicago.

PITTSBURGH INSTRUMENT & MACHINE CO., Pittsburgh—A Brinell hardness testing machine, microscope with illuminator, depth gage, impact testing machine, metal sheet tester, metallographic grinder and weight calculating instrument for carwheel manufacturers will be in this exhibit. Paul Kammerer and Charles Trueg will be in attendance.

PLIBRICO JOINTLESS FIREBRICK CO., Chicago—Will exhibit its furnace linings. Represented by J. E. Anderson, I. S. Pieters, C. W. Peacock, I. Kuttnauer and Frank S. Rieder.

POTTER & JOHNSON MACHINE CO., Pawtucket, R. I.—A turret-type and a platen-type automatic will be shown in operation on drive

Plant Visitations Are Attractive

PLANT inspection trips prove popular with members of the American Society for Steel Treating and convention programs always provide opportunity for visiting important manufacturing plants in the convention city. Located in Chicago and adjacent territory are many industries engaged in making, treating and fabricating metals and the plant inspection committee under the direction of T. E. Barker, president, Accurate Steel Treating Co., Chicago, has arranged a number of interesting trips for Tuesday, Wednesday, Thursday and Friday afternoons, starting promptly at 1:00 o'clock. A choice of visits is offered. The schedule of plants and what may be seen is as follows:

Tuesday, Sept. 21

Buda Co. and Wyman-Gordon Co., Harvey, Ill. The Buda company manufactures heavy-duty truck motors. Heat treating, forging and foundry departments will be visited. Wyman-Gordon company manufactures motor crankshafts principally. The drop forge plant is to be inspected.

Miehle Printing Press & Mfg. Co., Chicago. Heat treating, tool hardening, screw machine, gear and cam cutting, drill press, cylinder turning and grinding departments will be observed.

American Forge Co. and International Harvester Co., tractor works Chicago.

Wednesday, Sept. 22

International Harvester Co., West Pullman works, Chicago. Manufacture of roller bearings will be seen.

Youngstown Sheet & Tube Co., and Inland Steel Co., Indiana Harbor, Ind. The by-product coke plant, blast furnaces, bessemer and open-hearth steel plants, soaking pits, blooming and billet mills and pipe welding will be inspected at the Youngstown plant. Inland Steel company will show its rail mill, bar mill and fabricating plant.

Pettibone Mulliken Co., Chicago. Production of manganese steel by electric furnace, heat treatment and fabrication will be demonstrated. This company makes heavy railway equipment, including frogs, switches, etc.

Thursday, Sept. 23

Western Electric Co., Chicago. Visitors will see the copper wire and rod mill, rubber plant, lead cable department, toolmaking department and automatic machine switching laboratory.

Interstate Iron & Steel Co. and Illinois Steel Co., South Chicago, Ill. Manufacture and rolling of open-hearth alloy steel will be seen at the Interstate plant. Production of rails, shapes and plates by the open-hearth, electric and duplex methods will be shown at the Illinois plant.

Friday, Sept. 24

Illinois Central Railroad and Pullman Car & Mfg. Corp., Chicago. The former will show its modern shops and the latter its car manufacturing plant.

Columbia Tool Steel Co. and American Manganese Steel Co., Chicago. Tool steel manufacture will be seen at the Columbia plant and manufacture and heat treatment of manganese steel castings at the latter plant.

A. Finkl & Sons Co., and Aetna Ball Bearing Co., Chicago. At these respective plants will be seen die block manufacture and ball bearing manufacture.

Armour Institute of Technology, Chicago. This school will be open to visitors at all hours during the convention.

gears and axle carrier. R. N. Earle and L. J. Orr are in charge.

PRATT & WHITNEY CO., Hartford, Conn.—This exhibit will show in operation a 6-inch vertical shaper, 12-inch vertical shaper, 13-inch lathe, 16-inch lathe, 14-inch vertical surface grinder, 1x18-inch full automatic lathe and full automatic centering machine, with complete small tool and gage exhibit.

PRECISION TRUING MACHINE & TOOL CO., Cincinnati, O.

PRODUCTION MACHINE CO., Worcester, Mass.—A centerless feed production polishing and finishing machine, a combination production polishing and finishing machine and a junior centerless polishing and finishing machine will be in operation. W. S. Howe and A. H. Behnke will be in charge.

PYROTUNG MFG. CO., Chicago—Will exhibit lathe, planer and shaper tools made from its special metal, special tools, track drills, boring tools, signal and bonding track drills and ratchet drills. Represented by W. A. Otis, C. E. Sutton, B. C. Cleveland, C. E. Pynchon and C. T. Chance.

RACINE TOOL & MACHINE CO., Racine, Wis.—An operating exhibit includes a high-speed metal cutting machine, duplex band saw machine, high-speed reciprocating machine and a junior metal cutting machine with direct motor drive through worm gears. M. E. Erskine and E. R. Larson will be in charge.

RAHN-LARMON CO., Cincinnati, O.

RAND KARDEX SERVICE CORP., Tonawanda, N. Y.

REED-PRENTICE CO., Worcester, Mass.

REEVES PULLEY CO., Columbus, Ind.—This company will exhibit a variable speed control in three sizes and types, in operation, with control from close or remote stations to any number. Represented by C. M. Reeves, A. E. Shibley, C. B. Mott, F. T. Moore and C. B. Robinson.

REPUBLIC FLOW METERS CO., Chicago—Will exhibit in operation its new automatic temperature control and standard line of pyrometers, thermocouples and other accessories. Represented by J. D. Cunningham, J. M. Spitzglass, G. D. Conlee, M. J. Evans, H. H. Skabe and S. C. Vail.

RIVETT LATHE & GRINDER CORP., Boston—Will show in operation a plain bench lathe and its equipment, a back-geared screw-cutting precision lathe, production small-hole internal grinding machine, collets and rivet-threading tool. M. E. Johnson and A. L. Hathorne will be in charge.

ROCKWELL, STANLEY, P., CO., Hartford, Conn.—Will show in operation a dilatometer-type equipment for heat treatment, mounted on a pit-type furnace and a laboratory model with a small furnace. S. P. Rockwell, W. D. Fuller, R. W. Woodward and W. A. Stumpf will be in attendance.

ROCKWELL, W. S., CO., New York.

RODMAN CHEMICAL CO., Verona, Pa.—Carburizing materials, quenching oils and luting compounds will be shown in actual use. Hugh Rodman, O. T. Muehlenmeyer, G. A. Webb and S. P. Rockwell will be in attendance.

ROESSLER & HASSLACHER CHEMICAL CO., New York—This exhibit will demonstrate electroplating and heat treatment, cyanide mixtures, chemicals and case hardened and plated steel parts. W. M. Gager and C. H. Proctor will be in charge.

RUEMELEIN MFG. CO., Minneapolis, Minn.—Exhibit includes sanitary sandblast equipment, cabinets, fans, exhausters, sifters, guns and helmets. H. Ruemelin and C. H. Scholer will be in charge.

RYERSON, JOSEPH T., & SON INC., Chicago—Will exhibit in operation 21-inch lathe, milling machine, steel frame punch and shear, friction saw, shaper, horizontal boring, drilling and milling machine. Represented by A. G. Bryant, C. R. Gregg, A. P. Schumann, F. W. Delanty, F. G. Grosse, F. J. Clark, R. C. Page and D. MacArthur.

SAFETY EMERY WHEEL CO., Springfield, O.—Exhibit includes 12-inch motor-driven grinder with foot treadle control, 24-inch motor-driven grinder with pushbutton control, portable motor-driven polisher, grinding wheels and safety collars. Booth in charge of H. G. Bennett, L. P. Lamborn, C. L. Hyde, J. W. Hyde, H. G. Weinland and G. W. Gwyn.

GEORGE SCHERR, New York—Will show in operation a gear hobbing machine, a rotary cutting-off machine, an automatic hob grinder and a line of measuring tools. George Scherr, F. Koenig and G. Van de Plank are in charge.

SEBASTIAN LATHE CO., Cincinnati, O.—The operating exhibit will include 15-inch x 6-foot motor-in-the-leg geared head lathe, 20-inch x 8-foot semiautomatic production with motor in the leg. E. E. Stokes, William Schroder and Irvin Granneman will be in attendance.

SENECA FALLS MACHINE CO., Seneca Falls, N. Y.—Will show in operation its turning equipment, plain and automatic lathes, production lathes and screw-cutting engine lathes. Represented by E. R. Smith, J. A. Fyfe, W. H. Nettle, J. A. Camm, F. B. Webb and M. C. Day.

SHORE INSTRUMENT & MFG. CO., Jamaica, N. Y.—New type hardness testing machine will be shown, scleroscope and attachments, recording scleroscope, durometers, elastometer and compounds for varying hardness in metals. F. G. Kendall will be in charge.

SIDNEY MACHINE TOOL CO., Sidney O.—Operating exhibit will include 12-inch x 5-foot motor-driven geared head engine lathe, 14-inch x 6-foot lathe of same type, 16-inch x 6-foot cone head toolroom lathe and 18-inch x 8-foot motor-driven geared head engine lathe.

Convention Daily To Be Published Again

FOLLOWING the practice initiated last year at the Cleveland convention and exposition of the American Society for Steel Treating, DAILY METAL TRADE, *another Penton publication, will issue a special convention edition. These editions will appear on Tuesday, Wednesday, Thursday and Friday mornings and will contain complete programs and reports of convention sessions, description of the exposition, biographical sketches of prominent members of the American Society for Steel Treating and Society of Automotive Engineers, and a wealth of news of general interest. Complimentary distribution of copies of* DAILY METAL TRADE *will be made at the Exposition. In addition arrangements have been made to mail copies for all four days to all members of the society, thus carrying to those absent all the news while it is still news. Extra copies may be obtained at the headquarters of* IRON TRADE REVIEW *and* DAILY METAL TRADE *at Booth 37 in Section A.*

Represented by A. C. Getz, B. A. Getz, C. E. Brodw, F. D. Dickas and M. K. Miller.

SIMONDS SAW & STEEL CO., Lockport, N. Y.

S. K. F. INDUSTRIES INC., New York.

SKYBRYTE CO., Cleveland—Materials for cleaning glass in foundries and steel mills will be demonstrated. T. T. Holt and B. T. Sherk will be in charge.

SLEEPER & HARTLEY INC., Hartford, Conn.—Springmaking machinery and a universal spring coiling machine will be shown in operation. Patsy Mignacca will be in charge.

SMITH & MILLS CO., Cincinnati—This company will show in operation a 20-inch back crank shaper with standard equipment, in operation, with motor drive and including motor with magnetic switch and pushbutton control. J. E. Mills and W. J. Strewing are in charge.

SMITH, DAVID H., & SON, Brooklyn, N. Y.

SOUTHERN MANGANESE STEEL CO., St. Louis—Will exhibit heat and corrosion resisting alloy in form of carburizing boxes, annealing rabble arms, holders and blades and hearth plates and manganese steel castings for rolling mills. Represented by A. W. Daniels and E. F. Mitchell.

SPENCER TURBINE CO., Hartford, Conn.—Turbo-compressors for supplying air for oil and gas burning industrial furnaces and similar uses will be shown in operation at various pressures and capacities. Represented by S. E. Phillips, H. M. Grossman, A. W. Peard, C. E. Kauffman and I. J. Kristufek.

STANDARD FUEL ENGINEERING CO., Detroit—Its exhibit will include special refractories and high temperature cement, shown by G. H. Willett, T. Q. Cleland, C. S. Gordon and Richard Schoenfeld.

STANDARD STEEL SPECIALTIES CO., Beaver Falls, Pa.

STANDARD TOOL CO., Cleveland—Carbon and high speed twist drills, reamers, taps and milling cutters and drill chucks will make up this exhibit, in charge of J. H. Brinker, F. C. Selzer, John Taylor, R. B. Nuckols and J. L. Roddy.

L. S. STARRETT CO., Athol, Mass.—Will exhibit micrometers, vernier calipers and height gages, steel rules and tapes, calipers and dividers and other measuring tools. Represented by F. A. Ball, A. W. Smith, A. H. Starrett and D. Findlay.

STEEL CITY TESTING LABORATORY, Detroit—This exhibit will show in operation a hand operated brinell testing machine, a power operated brinell, apparatus for dishing test of thin plates, brass, bronze and aluminum and other testing devices. H. A. Weaver will be in charge.

STOCKER-RUMELY-WACHS CO., Chicago—This company will exhibit in operation tools manufactured by nine manufacturers. Represented by E. H. Wachs, J. H. Marlotte, R. R. Cuthbertson, Joseph Utz and Walter Mickelson.

STOCKBRIDGE MACHINE CO., Worcester, Mass.—An operating exhibit will be offered, including a 20-inch shaper of special type. A. W. Beaman will be in charge.

STRAND, N. A., CO., Chicago—Will exhibit in operation flexible shaft grinding, buffing and polishing machines in various sizes, flexible shafts of various sizes and special attachments for various purposes. N. A. Strand, O. V. Strand and C. W. Blakeslee will be in charge.

STUART, D. A., & Co., Chicago—Will exhibit oils grinding compounds and slushing compounds. Represented by C. A. Day, T. B. Langdon, W. H. Oldacre, C. H. Baker, W. H. Huelster, Paul Slivinski and E. J. Graham.

SUNDSTRAND MACHINE TOOL CO., Rockford, Ill.—This will be an operating exhibit, showing an 8-inch stub lathe for motor drive and completely tooled for a production job, a 12-inch lathe of the same type and a milling machine. Represented by E. W. Scheel, H. Kent, C. B. DeVlieg, D. B. Burleigh and G. A. Markuson.

SUN OIL CO., Philadelphia—Cutting, lubricating and motor oils and greases and machined part cut under this company's cutting oils will make up this exhibit. C. K. Hague, W. D. Hooper and R. S. Drysdale will be in attendance.

SURFACE COMBUSTION CO., New York,

SWEDISH CRUCIBLE STEEL CO., Detroit—The exhibit will include lead and cyanide pots, crucible carburizing boxes, nickel-chromium carburizing boxes, retorts, furnace grates and fittings, rails and alloy castings. Henry Nixon and S. R. Allen will be in charge.

SWEDISH IRON & STEEL CORP., New York.

TAYLOR INSTRUMENT CO.'S, Rochester, N. Y.—Will show electrical pyrometer equipment, including single and duplex recording pyrometer, high resistance portable and wall type indicator, automatic pyrometer controller, other pyrometer types, thermometers and controller. G. H. Howell, A. R. Lemke and H. Pagenstecher will be in charge.

THOMPSON, HENRY G., & SON CO., New Haven, Conn.—The operating exhibit includes a cutting-off machine with one type of blade for all metals, adjustable as to speed and feed. A full line of saws and blades also will be shown. Represented by G. T. Hey, A. W. Tucker, S. H. Hamilton, A. Lassen and R. B. Jones.

THOMPSON GRINDER CO., Springfield, O.—An improved self-contained, motor-driven 10 x 36-inch universal grinding machine will be shown in operation. H. J. Warrick will be in charge.

TIMKEN ROLLER BEARING CO., Canton, O.—Roller bearings applicable to machine tools and general industrial machinery and rods, gears and other articles of special steel, will be shown. Represented by H. H. Timken,

M. T. Lothrop, H. J. Porter, T. V. Buckwalter, L. M. Klinedinst, J. W. Spray, A. J. Sanford, C. A. Swan, B. E. Keifer, S. D. Williams, G. D. Thewlis, R. W. Ballentine, G. W. Curtis, H. C. Weirick, S. M. Weckstein, T. W. Hardy and J. E. Fick.

UNION DRAWN STEEL CO., Beaver Falls, Pa.—Cold drawn steel will be shown in rounds, squares, flats, hexagons and other standard and special forms and aircraft crankshafts of recent design. Represented by E. S. Hoopes, G. B. Mitchell, C. H. Beegle, L. E. Creighton, L. P. Sutter, O. W. Thompson, J. H. Armour, J. A. Quay, W. T. DeWalt, F. R. Bonte, A. M. LeTellier, B. H. Elliott, F. C. Young, Lou Carlisle and W. B. Huntley.

UNION ELECTRIC STEEL CORP., Pittsburgh.

UNION MFG. CO., New Britain, Conn'—Lathe, drill, planer and special chucks will be shown. E. I. Stevens will be in charge.

UNION TWIST DRILL CO., Athol, Mass.—This exhibit will include milling cutters, twist drills, hobs, saws, taps, dies, reamers and screw plates. Representatives in attendance will include J. H. Horigan, George F. Holland, E. H. Anthony, H. H. Knopke and W. T. Johnston.

UNISHEAR CO. INC., New York—This exhibit will show various models of shears for cutting straight lines, curves and complicated designs in sheet metals and other materials. U. F. Steindorff will be in charge.

UNITED ALLOY STEEL CORP., Canton, O.—This company with the Central Steel Co. will exhibit under the new name Central Alloy Steel Corp.

UNITED STATES ELECTRICAL TOOL CO., Cincinnati—Will have operating exhibit including universal drills, die grinder, bench and pedestal grinders of various types. Represented by J. C. Smith, G. E. Smith, M. J. Herold, E. C. Price, J. E. Hauser and R. W. Horsfield.

UNIVERSAL BORING MACHINE CO., Hudson, Mass.—An operating exhibit will include a universal horizontal boring machine with 3-inch boring bar and vernier scales to .001-inch, and auxiliary equipment. Represented by L. F. Marsh, W. B. Robbins, and C. F. Elston.

UNIVERSAL GRINDING MACHINE CO., Fitchburg, Mass.—Will exhibit in operation a universal grinding machine, multiple key shaft machine, and a valve seat grinding machine. Represented by C. S. Gould, M. Renaut and R. D. Gould.

UNIVERSAL STEEL CO., Latrobe, Pa.—Exhibit will consist of bars of high speed and carbon tool steels, ball and race, magnet, file, heat resistance and noncorrosive steels; sheets of saw, magnet, agricultural, softcenter, cutlery spring, heat resistance and noncorrosive steels and finished and semifinished articles made from these and machined manganese steel. Represented by U. G. Miller, H. M. German, Frank Garratt, Frank Saltsman, H. G. Copp Jr., Dr. Charles T. Evans and L. S. Nutting.

V & O PRESS CO., Hudson, N. Y.—Will show in operation a high speed roll feed press on production and a high speed notching press. H. U. Herrick and F. A. Beardsley will be in charge.

VACUUM BELTING CO., Indianapolis, Ind.—Will show its belting in operation. E. C. Grayson and Theodore Nelson will be in charge.

VANADIUM ALLOYS STEEL CO., Latrobe, Pa.—An exhibit will be made of high speed, alloy and tool steels, fractures to show effect of various treatments and typical tools made from these steels, and motion pictures of plant operations. Represented by R. C. McKenna, Floyd Rose, E. L. Moberg, J. P. Gill, L. D. Bowman, J. H. Roberts, D. A. Black, A. F. McFarland, W. R. Mau, R. R. Artz, R. F. Noonan and G. C. Buettner.

VAN DORN ELECTRIC TOOL CO., Cleveland.

VAN NORMAN MACHINE TOOL CO., Springfield, Mass.

VULCAN CRUCIBLE STEEL CO., Aliquippa, Pa.—Will show speed, carbon and alloy tool steels, special steels, materials used in their manufacture and tools and parts made from them. Represented by S. G. Stafford, R. M. Kelso, A. D. Beeken Jr., S. A. Stafford, E. H Lurker, C E. Palmer, O. H. Beall and L. D. Sullivan.

VULCAN MOLD & IRON CO., Latrobe, Pa.—Will exhibit solid ingot molds, split ingot molds and castings of electric furnace alloy cast iron. E. H. Williams and Edward R. Williams will be in charge.

WALCOTT MACHINE CO., Jackson, Mich.—An operating exhibit will show cam lathe, contour lathe, pin lathe, gear tooth grinder and gear tooth burring machine. D. G. Kimball, N. R. Townley, C. H. Sylvester, R. G. Williams and L. E. Broughton will be in attendance.

O. S. WALKER CO. INC., Worcester, Mass.—Will have operating exhibit including single stroke surface grinding machine, rectangular magnetic chucks, rotary magnetic chucks swiveling magnetic chucks, demagnetizer and planer parallels. G. J. Shirley will be in charge.

WAPPLER ELECTRIC CO., Long Island City, N. Y.

WARNER & SWASEY CO., Cleveland—This company will exhibit in operation a hollow hexagon turret lathe, several portable pneumatic tools and a portable pneumatic reversible drill. It will be represented by C. J. Stilwell, Gerald Kochenderfer, Karl Pohlman, John Kunze and Frank Castle.

WESTERN BEARINGS CO., Chicago.

WESTINGHOUSE ELECTRIC & MFG. CO., East Pittsburgh, Pa.—Exhibit will show in operation a box furnace with automatic heating control and recording pyrometer, a lead and salt pot furnace, furnace heaters and a small melting furnace. Represented by T. C. Kelley, J. C. Woodson, E. A. Hurme, Edwin Fleischman, F. T. Whiting, P. H. Grunnagle.

WHEELOCK, LOVEJOY & CO. INC., Boston—Will show alloy and tool steels in their applications to special parts. A. O. Fulton, E. H. Lovejoy, E. C. Bartlett, G. A. Baron, C. R. Jenks, L. P. Neeham, A. R. Townsend and F. J. DeVan will be in attendance.

WHIPP MACHINE TOOL CO., Sidney, O.—Will exhibit in operation a 36-inch openside planer shaper, in charge of G. E. Hieber.

WHITNEY MFG. TOOL CO., Hartford, Conn.—All types of this company's chains for power transmission will be shown in operation. E. H. Huntington and D. I. Wheeler will be in charge.

WHITNEY METAL TOOL CO., Rockford, Ill.—Its exhibit will include seven styles of hand-operated punches, four of hand shears and a complete unit for working in angle iron.

WILMARTH & NORMAN CO., Grand Rapids, Mich.—An operating exhibit will include a motor-driven wet surface grinder, a universal cutter and tool grinder, a drill grinder, a surface grinder and a cutter and tool grinder and a belt drive wet surface grinder. C. H. Slaughter and Arthur Williams will be in charge.

WILSEY-TUTHILL PUMPS, Chicago.

WILSON-MAEULEN CO. INC., New York—This company will show in operation a recording thermoelectric pyrometer, indicating thermoelectric pyrometers, recording resistance bulb thermometers, temperature controllers and hardness testers. Represented by M. A. Schreiner, C. E. Hellenberg, C. Rosecrans and G. B. Duff.

WISCONSIN ELECTRIC CO., Racine, Wis.—This operating exhibit will include a complete line of the company's high speed precision grinders. L. H. Hamilton, C. H. Beach, L. B. Augustine, R. T. Frank, L. J. LaMack, A. B. Clifford, W. B. O'Neill, C. A. Pope and Holly Nelson will be in attendance.

ZEH & HAHNEMANN CO., Newark, N. J.—Two power presses will be shown in operation, one equipped with stamping die for metals, and the other an inclinable press equipped with blanking die for metals, direct-connected motor and adjustable stroke.

ZIV STEEL & WIRE CO., Chicago—Will exhibit dies and punches made from various high production steels, hand and pneumatic tools, dies, chisels and punches from its unbreakable tool steel and mining steel in solid and hollow sections. Represented by G. F. Ziv, A. Ziv, N. J. Hyslip, A. F. Brunck, H. E. Ziv and R. J. Foley.

New Sheet Differentials Are Discussed

(*Concluded from Page* 605)

viously, as follows:

Blue Annealed

Gage	Price, 100 pounds
8 and heavier	Deduct 5c
9 and 10 (Carloads)	Base
11 and 12	Add 5c
13 and 14	Add 10c
15 and 16	Add 20c

Leading Sheetmaker Also Adopts New Card

Pittsburgh, Aug. 31.—Sheetmakers are in two camps as a result of the announcement of new gage differentials and the adoption of the No. 24 gage base for black and galvanized by the Youngstown Sheet & Tube Co. The American Sheet & Tin Co., has issued its own differential card, identical with that of Youngstown company, effective Sept. 1.

Such makers as the Follansbee Bros. Co. and the West Penn Steel Co., are undecided, but probably will reach a decision by the end of this week.

The No. 24 gage base has provoked much criticism. The chief objection is that it reduces prices on the heavier gages.

The claim is made that ten or 11 of the larger makers of sheets are certain to be on the side of the No. 24 gage base. If they stand as a unit and sell their heavier gages at prices now contemplated, they will force objectors to meet their level.

The Wheeling Steel Corp. is understood to have given tentative notice that it proposes to follow in adopting the new card of gage differentials and bases.

The Republic Iron & Steel Co. has printed and sent out new cards dated Sept. 1, accepting the new sheet differentials and bases in full.

Chicago Mill Prepares To Adopt New Base

Chicago, Aug. 31.—Adoption by the Youngstown Sheet & Tube Co. of the change in differentials for black and galvanized sheets is to be followed by the Inland Steel Co. if the selection of No. 24 gage as a base is accepted by the trade. Present quotations of 3.25c to 3.30c, delivered Chicago, for black, and 4.45c, Chicago, for galvanized, on the No. 28 gage basis, are made subject to withdrawal so that adoption of the new card of extras may be facilitated if acceptance finally is deemed advisable.

Whether adoption of No. 24 gage as the base will be effective on Sept. 1 or shortly after is undetermined, but predictions are that the new card of extras will guide sheet quotations as soon as is found practicable after Sept. 1. At present sales officials are studying the gage differentials proposed, in preparation for quoting prices on the new basis later, under which the lighter gages would be advanced $1 and $2 a ton, and possibly $3 for at least one gage.

A. F. A. Program Shows International Scope of Convention

PLANS for the thirtieth annual convention of the American Foundrymen's association and the Second International Foundrymen's congress to be held Sept. 27 to Oct. 1 at Detroit, indicate the meeting will be the most important event in the history of the American foundry industry.

The wealth of exhibits, covering over 80,000 square feet of actual booth space, and housed in three large buildings at the Michigan State fair grounds will place before the visitor, a display showing working exhibits of the latest developments in the equipment and material for the industry. This display will greatly exceed that of any previous exhibit.

Each branch of the foundry industry is recognized in the technical convention program sessions being scheduled for discussion of papers and reports pertaining to shop and metallurgical developments of the steel, nonferrous, malleable cast iron and gray iron industries. In addition there will be held several sessions on topics of interest to all branches of foundry practice.

Problems of the nonferrous industry are to be discussed at three joint meetings of the American Foundrymen's association and institute of metals division of the American Institute of Mechanical Engineering and one special session of the institute of metals. Aluminum alloys temperature determination of the nonferrous foundry metals and practical brass foundry problems are the topics to be taken up at the three joint sessions. The discussion of practical brass foundry topics will be taken up at a luncheon and the discussion will be of an informal round table nature following the custom set at the Syracuse convention last year.

In addition to the usual regular technical session on malleable iron, there will be held a luncheon meeting and round table discussion similar to the brass foundry round table meeting. These round table meetings have been arranged especially for the benefit of the practical shop man in order that he may bring up for discussion any phase of shop practice on which he wishes to have information.

Two sessions have been set apart for papers on steel foundry metallurgy and shop practice. Papers on open-hearth slags, effects of manganese in carbon steel castings and defects in steel castings cover three important subjects for discussion.

The papers on gray iron metallurgy comprise the most valuable program on this subject that has ever been presented at any one meeting. The gray iron foundryman will also find the papers on cupola and shop practice of great interest as some very interesting and new ideas and practices are explained.

The sessions on core binders, materials handling, foundry refractories, and sand control should prove of interest to all groups of foundrymen. At the session on foundry refractories, the work of the recently organized joint committee on foundry refractories will be explained, and the results of surveys of refractories problems of the various branches of the industry discussed. In connection with the refractories session the committee will have on display, in a technical exhibit booth in the registration building, exhibits of refractories shapes emphasizing the need for simplification of the numerous varieties of refractory blocks for use in malleable furnaces and for steel ladle sleeves and nozzles. At the two sessions devoted to foundry sand, recent practical shop control tests are to be presented in the form of papers and committee reports of the joint committee on molding sand research.

To Discuss Foundry Costs

The American Foundrymen's association committee on foundry costs will again sponsor a session for the discussion of this subject. E. W. McCullough, United States chamber of commerce, will explain the progress which is being made in development of cost keeping in the various industries of the country. R. A. Belt of the American Malleable Cast Iron association will discuss fundamentals of foundry cost records. The committee will conduct a guessing contest similar to the one held at the Syracuse meeting. Patterns from malleable iron, steel and nonferrous foundries will be on display and members of the association will be given an opportunity to estimate daily production and weights of castings produced from these patterns. Four prizes will be offered, one for each branch of the industry.

The American Foundrymen's association committee on apprentice training has organized an apprenticeship molding contest of national scope. Molding contests have been held in five districts, Wilmington, Del.; East Cambridge, Mass., Erie, Pa.; Milwaukee and in the Moline, Rock Island, Davenport district. The castings of the apprentices winning the contests in the district contests will be on display in a booth at the Detroit convention.

A discussion session on apprentice training will also be held at which those who have been undertaking foundry apprentice training will explain their work.

The various sand testing apparatus developed under the supervision of the joint committee on molding sand research will be on display. Demonstrators will be on hand to explain the operation of the equipment and the methods of testing.

Instructors of foundry practice in technical schools have been invited to meet at a dinner gathering, Tuesday evening, Sept. 28. Following the dinner, foundry instruction in schools will be discussed. Four papers outlining the purposes and methods of instruction at Carnegie Institute of Technology, The University of Michigan, Purdue University and the University of Illinois will be presented at this time.

The Second International Foundrymen's congress will be signally commemorated by the granting of three of the American Foundrymen's association gold medals to three prominent European foundrymen and metallurgists, as outlined on page 609 of this issue.

Will Install Controls

Automatic electric control is to be substituted for manual control on the remainder of melting furnaces at the Ludlum Steel Co's plant, Watervliet, N. Y. according to plans now being formulated. This company uses electric melting units of its patented design, which features a moveable hearth with a consequent increase in the production.

General Tool & Mfg. Co., 382 Fourth street, Milwaukee, has filed a voluntary petition in bankruptcy, showing liabilities of $33,942 and assets of $9550.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

BIRMINGHAM, ALA.—Vulcan Rivet Corp., Boyles street, has let contract to Virginia Bridge & Iron Co., Roanoke, Va., for additional plant buildings.

BIRMINGHAM, ALA.—Dixie Brass & Foundry Co., A. M. Shook Jr., president, Thirteenth street and Sixth avenue, is building an iron foundry.

BIRMINGHAM, ALA.—Anderson Brass Works, 700 North Forty-fourth street, has let contract to Ingalls Iron Works Co., Birmingham, for 1-story plant 68 x 105 feet for nonferrous foundry.

TARRANT CITY, ALA.—Vulcan Rivet Co. is building an addition to quadruple its capacity. W. C. Martin is president.

HOT SPRINGS, ARK.—Missouri Pacific railroad, Railway Exchange building, St. Louis, E. A. Hadley chief engineer, will take bids shortly for an engine terminal here, including car repair shops.

LOS ANGELES—Kay Steel Wheel Co. has given contract to the Austin Co. for the first unit of its plant on Meridian street.

LOS ANGELES—Advance Auto Body Works has had plans made by L. L. Jones, architect, for a 1-story factory building at Mission road and Macy street, covering 31,000 square feet of floor space.

AURORA, COLO.—Martin Automatic Lock Nut Co. has been incorporated with $250,000 capital by R. W. Martin, H. H. Gard and J. H. Weil.

HARTFORD, CONN.—Arrow Electric Co., 103 Hawthorne street, manufacturer of specialties, has had plans drawn for an addition to increase production.

MERIDEN, CONN.—International Silver Co. has had plans drawn for an addition to its plant at Northampton, Mass.

NEW LONDON, CONN.—Crown Sheet Metal Works, 186 Bank street, has let contract for a 2-story shop addition 50 x 100 feet.

ATLANTA, GA.—The Bird-Potts Co. Inc. has purchased large tract on the Atlanta & West Point Belt Line where it will start work shortly on the first unit of a large welding plant.

CHICAGO.—Crane Co., 826 South Michigan avenue, is taking bids on a 1-story factory branch and distributing plant at Aurora, Ill.

CHICAGO.—Duston Auto Spring Mfg. Co., 2441 West Forty-eighth street, will build a 1-story plant 55 x 120 feet.

CHICAGO.—Overhead Door Co., 8066 South Chicago avenue, has let contract to VanSetten Bros., 11016 Michigan avenue, for a 2-story plant 50x132 feet.

CHICAGO—Northwestern Stove Repair Co., Stephen Gardner secretary, 654 Roosevelt road, has let contract to William J. Angus, 3127 Shields avenue, for a 2-story addition 77 x 125 feet, at 739 Bunker street.

CHICAGO—Switch Track Material & Construction Co., 4835 South Wallace street, has been incorporated with $20,000 capital to construct railroads and appliances by Cornelius R. Coughlin, Arthur Tearney and George M. Tearney. Tearney & Conner, 134 North La Salle street, is correspondent.

CHICAGO—Whitcher Smoke Eliminator Corp., 3361 Parnell avenue, has been incorporated with 80 shares no par value to manufacture smoke eliminators by Frederick K. Whitcher, Homer R. Lang, F. C. Myers. Alec W. Glaskay, 127 North Dearborn street, room 914, is correspondent.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

CHICAGO—Champion Sales Corp., 28 East Jackson boulevard, has been incorporated with 500 shares no par value to manufacture refrigerating machinery, washing machines and ironers by C. E. Hartel, W. Scott Robinson and Carl H. Zeiss. Pratt & Zeiss, 111 West Monroe street, are correspondents.

CHICAGO—Nye Mfg. Co., 12 East Fifty-seventh street, has been incorporated with $10,000 capital to manufacture baking machinery and equipment by Arthur W. Nelson, Torris H. Alfreds and Rudolph W. Lotz. Arthur W. Nelson, 112 West Adams street, is correspondent.

DECATUR, ILL.—Wagner Malleable Iron Co., A. W. Wagner president, 751 North Lowber street, is considering sketches for a 1-story annealing building 75 x 125 feet.

DECATUR, ILL.—Wabash Railway Co., J. E. Taussig president, Railway Exchange building, St. Louis, is having plans drawn for an addition to its reclamation plant, one story, 50 x 150 feet.

ELGIN, ILL.—Elgin Cabinet Corp., 19 Union street, has been incorporated with $55,000 capital to manufacture radio appliances and other metal devices by Arthur E. Pizzaro, August Pizzaro and Adam Pizzaro. Shepperd & Huntley, Spurling block, Elgin, are correspondents.

NORTH CHICAGO, ILL.—Fansteel Products Co. will build a 2-story plant 100 x 100 feet on State street to increase capacity.

AURORA, IND.—Stedman Foundry & Machine Co. has let contract to the Austin Co., Cleveland, for a 1-story addition to its foundry.

BOONVILLE, IND.—Auto Shop Inc. has been incorporated with $10,000 capital to manufacture metal goods by W. W. Bateman, Addie Bateman and Margaret Bateman.

EVANSVILLE, IND.—Louisville & Nashville railroad is having plans made for a 19-stall roundhouse and additional shops to double present capacity.

EVANSVILLE, IND.—Evansville Metal Bed Co. has been incorporated with $100,000 capital to manufacture metal beds by William A. Koch, Albert F. Karges, Henry J. Karges, Carl W. Bingaman, Philip Speck, Emory K. Scherer and John P. Frisse.

INDIANAPOLIS.— Murdock Pump co., 3500 East Washington street, has let contract for a plant 100 x 200 feet.

INDIANAPOLIS, IND.—The Parts Corp., Albert Kelley president, 733 Virginia street, has let contract to the Hall Construction Co., Board of Trade building, for a 1-story addition 30 x 100 feet.

INDIANAPOLIS, IND.—Link Belt Co., Alfred Kauffman president, Belmont avenue and Big Four railroad, has let contract to John R. Curry Construction Co., Empire Life building, for a 2-story addition 80 x 100 feet.

INDIANAPOLIS—Marmon Motor Car Co., G. M. Williams president, 1101 West Morris street, has let contract to H. K. Ferguson Co., Cleveland, for a factory addition 1-story 40 x 400 feet, and remodeling of other structures.

BALTIMORE—Bethlehem Shipbuilding Co., J. M. Willis general manager, South and Water streets, is having plans made for an addition to its shipyards.

BALTIMORE — Bethlehem Shipbuilding Corp. has bought several acres and several buildings thereon adjoining its plant here and will build additional buildings and three piers, devoting the plant to ship repairs.

BOSTON—Boston Battery Parts Co. has been incorporated with $10,000 capital to manufacture battery and automotive parts and radio and electrical products by Walter M. Harding, 62 Tuttle street Dorchester, Mass., president and George H. B. Green Jr.

FALL RIVER, MASS.—Hazard & Clifton Laundry Inc. has been incorporated with $25,000 capital to manufacture mill supplies by William Clifton president, Arthur J. Hazard treasurer, 34 Kellogg street, Fall River, Mass.

FITCHBURG, MASS.—Fitchburg Mining Machine Corp., has been incorporated with $480,000 capital and 2000 shares no par value to manufacture iron, steel and other metals and machinery, by Robert D. Gould president, Leominister, Mass., Alton F. Tupper and Arthur F. Goodman.

LYNN, MASS.—Thomas Electric Welding Co., 61 Pleasant street, is having plans drawn by Heaven & Hopkins, 11 Beacon street, mill at its plant here.

WOBURN, MASS.—Massachusetts Gear &

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$40.00 to 43.00
Pennsylvania, No. 2	35.00 to 38.00
Ohio, No. 1	40.00 to 43.00
Ohio, No. 2	35.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	40.00 to 43.00
Kentucky, No. 2	38.00 to 40.00
Missouri, No. 1	40.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	40.00 to 45.00
Maryland, No. 2	35.00 to 37.00
Georgia and Ala. No. 1	40.00 to 45.00
Georgia and Ala. No. 2	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Chicago	42.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

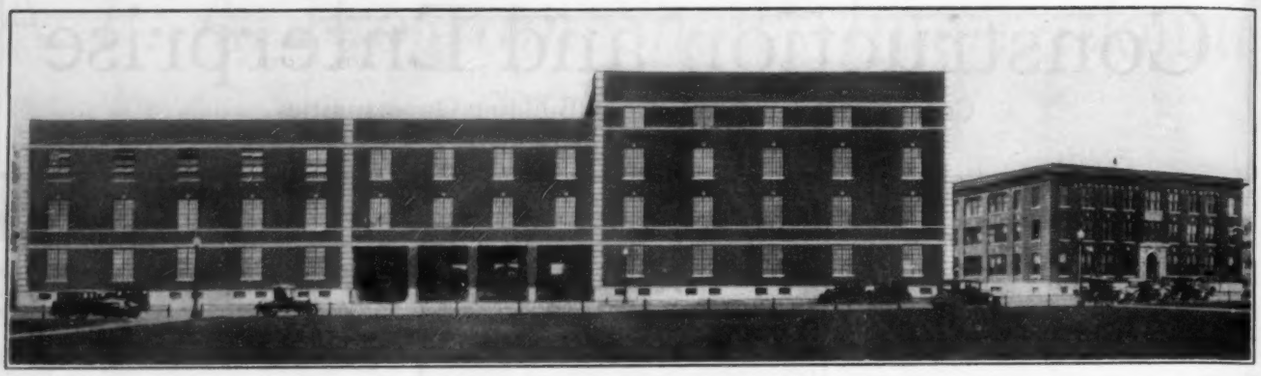
Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00



PLANT OF J. B. FORD CO., WYANDOTTE, MICH., MANUFACTURER OF CLEANSING MATERIALS

Tool Co., Nashua street, is building a 1 and 2-story addition 70 x 80 feet.

WORCESTER, MASS.—American Steel & Wire Co. has started construction of a rolling mill at its plane here.

DETROIT—Electrical Refrigerating Corp. has let contract to W. E. Wood & Co. its factory and office building.

DETROIT—Cogsdill Mfg. Co., manufacturer of metal-cutting tools, is building an addition 35 x 140 feet to increase production.

DETROIT—Lincoln Forging Co., J. G. Foyer secretary, is considering plans for a 2-story factory building 60 x 100 feet.

DETROIT.—Continental Tool Co., S. F. Wall president, McGraw street, has let contract to the Austin Co., for a machine shop 110x 250 feet.

DETROIT—Triangle Tool & Pattern Co. T. H. Barkley manager, 207 Brady avenue, has let contract to F. M. Stokes, 6432 Northfield avenue, for a 1 and 2-story plant 50 x 100 feet.

DETROIT—Schober Auto Lock Co. has been incorporated with $2000 capital to manufacture mechanical devices by H. A. Crudder, Sylvester D. Lynch and Fremont M. Schober, 428 Sixth street.

FLINT, MICH.—Armstrong Spring Co., manufacturer of automobile springs is having plans made for additions to its plant.

FLINT, MICH.—Flint Structural Steel Co. has been incorporated with $150,000 capital to deal in metals of all kinds by Arthur G. Bishop. Edward W. Perkins and Reinhard Kleinpell, 702 Liberty street.

MUNISING, MICH.—Cleveland Cliffs Iron Co. suffered large loss by fire to its plant here.

WYANDOTTE, MICH.—Detroit Brass & Malleable Works, A. Dugrey general superintendent, is equipping a hot-dip galvanizing plant for pipe fittings.

JACKSON, MO.—Seabaugh Lighting Rod Co. has been incorporated by Cameron Seabaugh and Hunter C. Burns, St. Louis.

KANSAS CITY, MO.—Dierks & Son Lumber Co., Hans Dierks president, Nineteenth and Woodland streets, is having plans made for a power plant including three steel buildings each one story 70 x 75 feet.

ST. LOUIS—Economy Steel & Mfg. Co., 3850 Easton avenue, has been incorporated by Stephen L. Robertson and Joseph B. Robertson.

ST. LOUIS—Stinson Adding Machine Improvements Co., H. Stinson president, 321 South Grand avenue, is having plans drawn for a 2-story plant 60 x 250 feet.

BORDENTOWN, N. J.—National Cap Corp. has been incorporated with $250,000 capital to manufacture bottle caps by George W. Swift, Bordentown, Hudson T. Winner, Drexel Hill, Pa., Francis W. Overton, Trenton, N. J. George W. Swift Jr., Bordentown, N. J., is attorney.

Much Space to Making Cleansing Materials

J. B. Ford Co., Wyandotte, Mich., a suburb of Detroit, has just completed a new plant for the production of its line of commercial cleaning materials, 285 x 375 feet and 73 to 84 feet in height. It has been figured a third of the time of the world's workers is devoted to cleaning operations and supplying the materials thus becomes a large undertaking. The growth of this concern is indicated by the fact that where three cars could be loaded at one time in the former plant 20 now can be handled at the loading platform, in addition to the trucking shipments at the four entrances shown in the illustration. Above are shown the buildings housing the finishing departments and offices, the production of raw materials being carried on in another place. Immediately behind the office building is another housing the advertising department where all direct advertising matter is prepared.

BORDENTOWN, N. J.—Bottle Cap Patents Co. has been incorporated to manufacture bottle caps with $200,000 capital by George W. Swift Jr., Bordentown, Hudson T. Winner, Drexel Hill, Pa., and Francis W. Overton, Trenton. George W. Swift Jr., Bordentown, is attorney.

ELIZABETH, N. J.—Elizabeth Foundry Co., 712 Princeton avenue, will build a 1-story foundry addition.

HILLSIDE, N. J.—H. R. Goeller Inc., has been incorporated with $150,000 capital by John Goeller, Hillside; and George Kollmar, Irvington. Edward C. George, Newark, N. J., is attorney.

NEWARK, N. J.—Contract has been let by the Western Electrical Instrument Co. for a new building.

NEWARK, N. J.—Fertall Corp. has been incorporated to manufacture guns, with 1000 shares no par value by John H. Meister, Irvington. Billder & Billder, Newark, are attorneys.

NEWARK, N. J.—Pyramid Spark Plug Mfg. Co. has been incorporated with $20,000 capital by Charles T. Cubellis, Lynn Vitale, Albert Vitale, Newark. Charles C. Giffoniello, Newark, is attorney.

NEWARK, N. J.—Franklin Appliance Co. has been incorporated with $50,000 capital and 4000 shares no par value to manufacture flatirons and other devices by Walter A. Peterson, J. Newton Nash and E. Stuart Soragues, New York. Hunt, Hill & Betts, New York, are attorneys.

PATERSON, N. J.—Refrigeration Machinery Co. has been incorporated with $100,000 capital to manufacture refrigeration machinery by William R. Knet, Passaic, N. J., Clark D. Sixx and Victor Koransky, Paterson. M. Metz Cohn, Paterson, is attorney.

UNION CITY, N. J.—Kingston Brass Foundry Co. has been incorporated with $100,000 capital by Charles C. Kingston, Bayonne, N. J.; Walter B. Williams and Theodore D. See, Jersey City. C. E. Stewart, Jersey City, is attorney.

BROOKLYN, N. Y.—Max Levine & Sons has been incorporated with $20,000 capital to manufacture metals by Max Levine, D. Levine and S. Levine. C. B. Levine, 578 Madison avenue, New York, is attorney.

BROOKLYN, N. Y.—Masshasset Mfg. Co. has been incorporated with $25,000 capital and 250 shares no par value to manufacture razor sharpeners and other devices by G. F. Massa, C. F. Massa and J. G. Bethell. Kiddle and Margeson, 115 Broadway, are attorneys.

BUFFALO—Samuel C. Rogers & Co., 16 Lock street, will build a 1-story addition 80 x 130 feet at 201 Dutton street.

NEW YORK—Eller Auto Body Co. has been incorporated with $15,000 capital to manufacture automobile bodies by . Striziver, S. Slutzky and B. Bunkin. S. M. Ostroff, 233 Broadway, is attorney.

CHAUTAUQUA, N. Y.—Excel Metal Cabinet Co. has been incorporated with $50,000 capital to establish a business at Falconer, by O. Bard, H. Lindgren and B. Widmark. Carlson & Alessi, Jamestown, are attorneys.

NEW YORK—Eastern Scrap Iron & Metal Co. has been incorporated with $10,000 capital by S. Gurian, B. Stark and L. Rubenfeld. Apfel & Apfel, 1440 Broadway, are attorneys.

NEW YORK—Everlight Electric Equipment Co. has been incorporated with $10,000 capital by M. E. Weiss, M. Weiss and S. Ganz. Stern & Stern, 51 Chambers street, are attorneys.

NEW YORK—Federal Die Sets has been incorporated with $5000 capital to manufacture tools by J. C. Zhwann, F. C. Danneman. C. W. Philipbar, 216 Montague street, is attorney.

NEW YORK—Electro Con Corp. has been incorporated to handle machinery with $5000 capital and 250 shares no par value by E. Miller, G. Arthur Richroth and S. D.

Livingston. F. H. Reeve, 2 Rector street, is attorney.

NEW YORK—Walter Equipment Co. has been incorporated with $100,000 capital to manufacture machinery by E. Weiner, J. Kraus and W. Walker. J. E. Hurwitz, 51 Chambers street, is attorney.

NEW YORK—C. & D. Electrical Supply Co. has been incorporated with $5000 capital to manufacture machinery by J. Kress, S. Panzer and J. Frost. Koppelman & Ross, 277 Broadway, are attorneys.

NEW YORK—Marine Laboratories of America has been incorporated with $10,000 capital to handle machinery by S. Askhaven, L. F. Clark and M. Clark. M. Steindler, 116 Nassau street, is attorney.

NEW YORK—Metal Lathing Co. has been incorporated with $110,000 capital to manufacture metal lath by A. Monforto, T. Gagliano and J. Morello. F. Ciraolo, 51 Chambers street, is correspondent.

NEW YORK—Rayco Co. has been incorporated with $20,000 capital to manufacture sheet metal products by R. F. Menedez and C. E. Brewster. R. C. Menendez, 126 Jerome street, Brooklyn, N. Y.

NEW YORK.—Segal Lock & Hardware Co., 155 Leonard street, has bought a block in Brooklyn at Ferris and Sullivan streets and will build additional structures, moving its plant there to gain additional production capacity.

NORTH TONAWANDA, N. Y.—Landon Radiator Co. has been incorporated with $500,000 capital and 20,000 shares no par value to manufacture radiators by A. A. Landon, G. F. Rand and S. H. Knox. E. H. Letchworth, Buffalo, N. Y., is attorney.

POUGHKEEPSIE, N. Y.—Twin Coupler Co. has been incorporated with $100,000 capital to manufacture radio apparatus by C. Corbin, G. M. Heinzelmann and T. F. Leahey. J. E. Carroll, Poughkeepsie, is attorney.

GASTONIA, N. C.—Gastonia Roller Covering Co. has been incorporated with $100,000 capital to build and operate a foundry by O. P. Hord and M. G. Hord.

GASTONIA, N. C.—Mill Devices Co., J. L. Gray president, East Franklin avenue, has let contract to J. L. Beam, Cherryville, N. C. for plant on Linwood street 30 x 90 feet to increase production of knotters for cotton mills.

BARBERTON, O.—Barberton Foundry Co. is having plans drawn for a new foundry plant.

CANTON, O.—Timken Roller Bearing Co., H. H. Timken president, has let contract to the Middle States Construction Co., 524 East Hudson street, Columbus, O., for a 1-story addition 150 x 325 feet and 80 x 325 feet.

CLEVELAND—Reliance Electric & Engineering Co., Ivanhoe road, has let contract to the Austin Co., Cleveland, for a 2-story addition 40 x 80 feet, equipped with two 3-ton traveling cranes. C. V. Putnam is secretary.

COLUMBUS, O.—D. L. Auld Co., S. G. Brook secretary, East Fifth avenue and Fifth street, manufacturer of metal name plates, has given contract to T. J. Schirtzinger Co., 1535 North High street, for a 1 and 2-story addition 73 x 75 feet.

TOLEDO, O.—Toledo Pipe Threading Co. has had plans made by Mills, Rhines, Bellman & Nordhoff, architects, 1234 Ohio building, for an addition for warehouse purposes 40 x 100 feet.

OKLAHOMA CITY, OKLA.—Hughes Tool Co., 12 West Twentieth street, has plans and will build at once a warehouse to cost $12,000.

BRADFORD, PA.—Midwest Steel & Supply Co. Inc., J. Hillstrom general manager, will build a 1-story addition to its plant at East Bradford, 50 x 100 feet.

HAZELTON, PA.—Evans Colliery Co. has had plans drawn for a 1-story forge shop and woodworking plant at its plant here.

PHILADELPHIA.—Otto Engine Works, walnut and Thirty-third streets, is building a 1-story plant 146 x 260 feet at Rahn street and State road.

PHILADELPHIA—Contract for $20,000 warehouse for Roberts Bros., Ontario and Casper streets, has been awarded to Louis Rosengarten, Otis building.

PHILADELPHIA—Philadelphia Gear Works, Tioga and Richmond streets, Russell C. Ball president, is having plans drawn for a 2-story addition, for which equipment will be required.

PHILADELPHIA—Thomas Devlin Mfg. Co., Lehigh avenue and Third street, hardware specialties, has let contract to the Austin Co. for a 1 and 2-story addition to its plant at Burlington, N. J., 42 x 100 feet, 50 x 175 feet for a machine and galvanizing shop.

PHILADELPHIA—The La France Fire Engine Co. has taken a long term lease on a $150,000, 1-story sales and service building to be erected by Thomas E. Gibb from plans prepared by Carson & Carson, engineers, of this city.

ROCHESTER, PA.—Guarantee Liquid Measure Co. is having plans drawn for a 1 and 2-story addition 360 x 360 feet.

SPARTANBURG, S. C.—G. A. Strohbom, Newton Upper Falls, Mass., is said to be planning machine shop on Liberty street for manufacture and repair of parts of cotton-mill machinery, including screens, slasher drums and tin cylinders.

GREENVILLE, TEX.—L. C. Reynolds will build foundry 50 x 100 feet on East Jordan street to manufacture sawmill equipment and grate bars.

RICHMOND, VA.—Thurston Pump Co., J. W. Thurston president, 710 East Franklin street, is establishing a plant to manufacture positive measuring pumps.

FT. ATKINSON, WIS.—The Auto Wing Co., capital stock $75.000, has been incorporated here to manufacture automobile accessories of glass, metal and other materials, principally auxiliary windshields, brackets, etc. The incorporators are Russell W. Albertson, J. G. Schodron and R. R. Gardinier.

GREEN BAY, WIS.—Northwest Engineering Co. has had plans made by the Wisconsin Bridge & Iron Co., Milwaukee, for a 1-story plant.

MANITOWOC, WIS.—Aluminum Specialty Co. is planning extensive additions to its plant and is issuing additional stock to finance the construction and equipment.

MANITOWOC, WIS.—The Kelly Safety Gate Co. has been incorporated here with $40,000 capital stock to manufacture steel gates for various purposes. It also intends to manufacture street and road safety signals and other traffic necessities. Incorporators are J. M. Kelly, Leo G. Murphy and J. G. Garey.

MILWAUKEE—Extensive alterations, with an addition 100x700 feet will be made by Filer & Stowell Co., manufacturers of heavy machinery.

MILWAUKEE—A. F. Gallu & Sons Co., 1000 North Water street, leather manufacturer, is having plans drawn for a 1-story machine shop 88x120x120 feet.

MILWAUKEE—R. J. Schwab & Sons, 283 Clinton street, manufacturing domestic furnaces and other heating devices, has broken ground for a 1-story addition, 40 x 70 feet.

MILWAUKEE—The Specialty Machine Co. of Wauwatosa, Milwaukee county, has been incorporated with $25,000 capital stock by Charles L. Kunkel, Herman Jung and William Bessenbrugge.

MILWAUKEE—Court permission has been granted receivers of the Chicago, Milwaukee & St. Paul railroad to buy equipment for its locomotive and car shops at West Milwaukee, the first buying for several years.

MILWAUKEE—Louis Schramm let the general contract for the erection of a public garage and repair shop costing $35,000 at 1603 Galena street to Paul Hirt, 979 Forty-seventh street.

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.50
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	10.00 to 11.00
North African low phosphorus	9.25 to 9.75
Swedish and Norwegian low phosphorus, 68 per cent	10.25 to 10.75
Swedish foundry or basic, 66 to 68 per cent	9.00 to 9.50
Spanish foundry or basic, 50 to 54 per cent	8.75 to 9.25
North African foundry and basic 50 to 54 per cent	8.50 to 9.50

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent, 32 to 35 cents
Indian, minimum 47 per cent....32 to 35 cents
Caucasian, 53 to 55 per cent.....
Washed .....40 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$17.50 to 18.00
Washed gravel, imported duty paid eastern tidewater, per tons	16.50 to 17.75

Business in Canada

HAMILTON, ONT.—A. Carey & Sons Ltd. has been incorporated with $55,000 capital to manufacture radio apparatus by Cecil V. Langs, Ewart G. Binkley, and Edna M. Green.

KIRKLAND LAKE, ONT.—Arrangements are nearing completion for the placing of contracts in connection with milling plant to be erected on the Teck-Hughes property here. The mill will be designed to treat high grade ore and will have a capacity of 500 tons per day.

LARDER LAKE, ONT.—The Crown Reserve Mining Co. proposes to raise $400,000 to carry out further development and to build a new mill here.

MIDLAND, ONT.—The plant of the International Fireboard Co., here was destroyed by fire Aug. 15.

NIAGARA FALLS, ONT.—The Niagara Wire Weaving Co. will build addition to its plant here 110 x 120 feet, to be equipped for the manufacture of wire cloth screen, 270 inches in width for the paper mills of Canada.

OSHAWA, ONT.—The Central Spring Co. has started work on an addition to its plant here and will require machinery and tools.

OSHAWA, ONT.—The General Motors Corp. of Canada, Ltd., will build addition to wood drying kiln here to cost $20,000.

CHARLESBOURG, QUE.—Town council will spend $68,000 on installation of waterworks plant and system.

LIMOILOU, QUE.—According to a statement made by Frank Clarke, vice president of the Anglo-Canadian Pulp & Paper Co., bids will be called at an early date for the construction of a mill here.

MONTREAL, QUE.—The Johnson Wire Works, Dagenais street, has taken out a permit for addition to its plant here to cost $25,000. Construction work to be started immediately.

MONTREAL, QUE.—American Autoparts & Gear Corp. Ltd. been incorporated with $50,000 capital by Joseph Shapiro, Michael Garber, Isidore Popliger, and others.

MONTREAL, Que.—The National Cement Co. is planning to increase the capacity of its plant by about one-third by the construction of a new kiln-unit, work on which will be commenced immediately.

ROUYN, QUE.—Bids are being received by the Noranda Mines & Copper Corp., Keefer building, Montreal, Que., for a smelter here to cost $1,000,000. No closing date set.

New Trade Publications

VALVES—Homestead Valve Mfg. Co., Homestead, Pa., has issued a booklet featuring its type of valves and containing a catalog of various sizes and materials.

LUBRICATION—The Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., has issued a bulletin on the lubrication of cranes and hoists manufactured by this company.

THREADING MACHINES—A portable electric pipe machine is described in a catalog issued by Hall-Will, Erie, Pa. Details of construction are shown and economies of operation outlined.

TURRET LATHE—Jones & Lamson Machine Co., Springfield, Vt., has issued a bulletin showing its flat turret lathe, for bar work. This is a new model with special features for certain classes of work.

AUTOMATIC SCREW MACHINES—Production of heavy work with accuracy is the aim of automatic screw machines described in a bulletin by Browne & Sharpe Mfg. Co., Providence, R. I.

FANS AND BLOWERS—Buffalo Forge Co., Buffalo, has issued a pamphlet describing its small conoidal pressure fans and one on its electric blowers. Ratings and constructional data are given.

POLISHING AND BUFFING LATHES—Crown Rheostat & Supply Co., Chicago, has issued a booklet describing its ball bearing lathes for polishing and buffing, in belt driven and gear driven electric types.

MOTORS—The General Electric Co., Schenectady, N. Y., has issued two folders showing the main constructional features of its wound rotor induction motor and its direct current, enclosed type crane and hoist motor.

GRINDING—Flexible grinding and polishing of metals is discussed and described in a booklet by the Norton Co., Worcester, Mass. Application of various wheels and belts and proper abrasives form an important feature.

TOOLS—A catalog of tools has been issued by the National Acme Co., Cleveland, covering tools, attachments and chucks for its multiple spindle and automatic screw machines. Illustrations, data and text indicate their use and advantages.

INDUSTRIAL SIGNALS—Visual and audible signals for industrial purposes are described in a booklet by the Benjamin Electric Mfg. Co., Chicago. Twelve signaling circuits are shown and numerous other applications are described.

GRAPHITE BRUSHES—Various types of commutator brushes manufactured by the United States Graphite Co., Saginaw, Mich., are shown in a catalog recently issued. Sizes, grades and characteristics of each type of brush are given.

MOTORIZED POWER—General Electric Co., Schenectady, N. Y., has issued a bulletin on direct current crane and hoist motors, with full details of construction and operation pictured, and data on ratings. Another bulletin describes rotor induction motors for heavy starting duty.

PRESSED STEEL WHEEL—Evans & Retting Lumber Co., Grand Rapids, Mich., has issued a sales sheet describing the pressed steel truck wheel which it now is distributing. A cut away illustration showing the construction of the wheel and the roller bearing hub accompanies the descriptive text.

RIGHT ANGLE DRIVES—Boston Gear Works Sales Co., Norfolk Downs, Mass., has issued a catalog covering its right angle drives, with worm, bevel, miter and spiral gears, standardized, for immediate delivery. Illustrations and data fully describe the various gears.

SPACE HEATERS—Heating units in convenient forms for industrial and commercial purposes are described in three pamphlets by Edwin L. Wiegand Co., Pittsburgh. These units may be secured in various sizes and in the form of immersion, strip and space heaters.

OVENS—Indirect air heated ovens for enameling, drying and baking manufactured by the McCann-Harrison Corp., Cleveland, are shown and described in a catalog just published. Specifications are given and some industrial installations are shown in illustrations.

CEMENT—The General Refractories Co., Philadelphia, has issued a folder on a new refractory cement it has developed. The base of the cement is chromite, and it is claimed no sodium silicate or low fusion binders are used in the cement. This cement may be used for metallurgical purposes and in furnaces or boiler settings.

MILL EQUIPMENT—The Hill Clutch Machine & Foundry Co., Cleveland. Has issued three catalogs describing machinery and equipment manufactured by this company. One catalog describes shafting and bearings, another describes clutches, pulleys and belt tighteners, and the third rope drives, gears, speed transformers and sprockets.

SUCTION TORCH—A bulletin has been issued by Hauck Mfg. Co., Brooklyn, N. Y., describing a suction torch recently placed on the market. It operates without the necessity of maintaining pressure on the oil supply tank, thus eliminating an element of danger. Details of the new type of torch are presented.

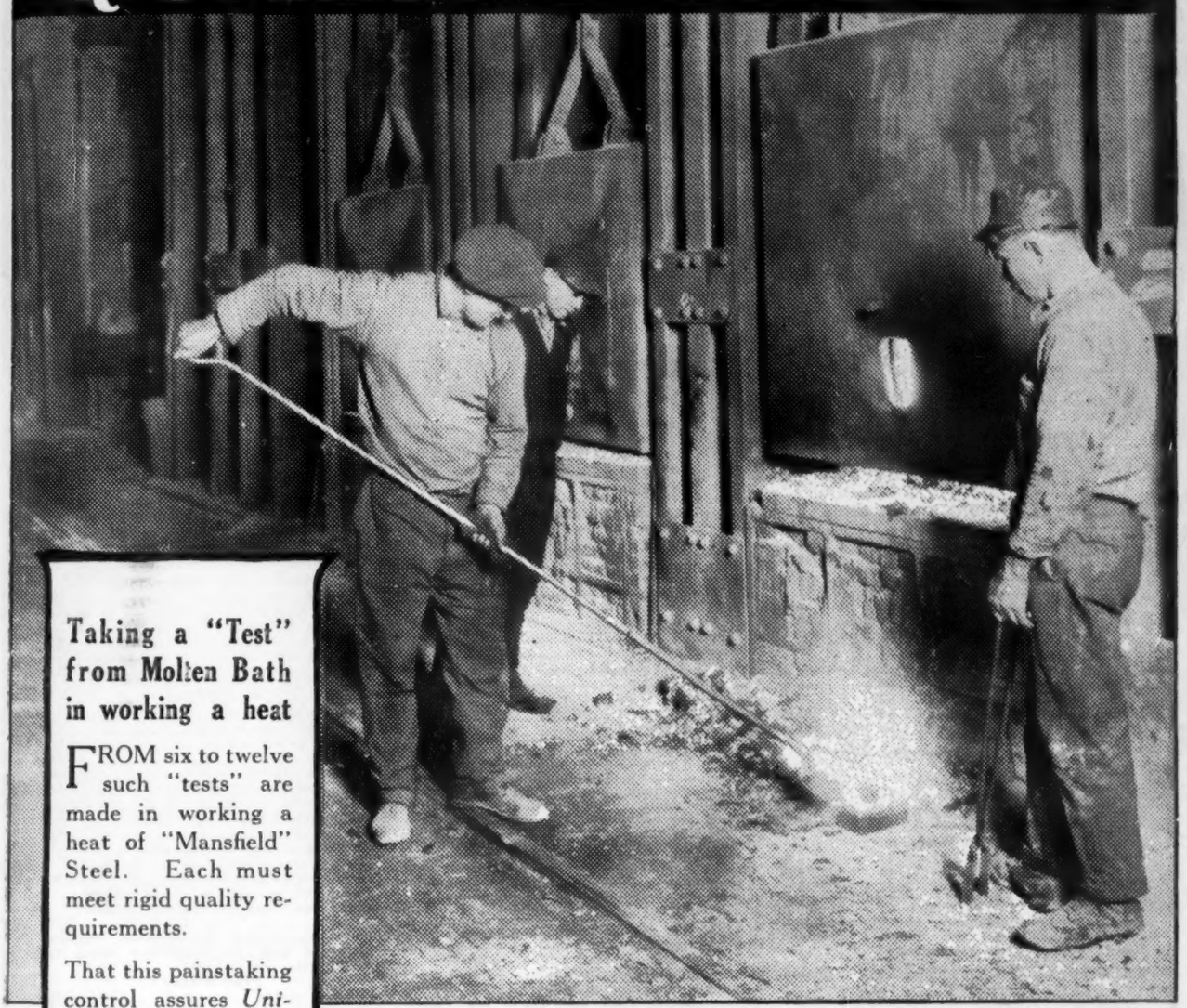
DRILLS, GRINDERS AND BUFFERS—The United States Electrical Tool Co., Cincinnati, has published a new catalog showing the various machines manufactured by the company. Features of construction are shown, specifications and equipment for the machines are given. These machines may be used for a variety of purposes in grinding, polishing and buffing.

STOP AND CHECK VALVES—An equalizing stop and check valve for boiler efficiency manufactured by Jenkins Bros., New York, is featured in a bulletin just issued. Its purpose is to give notice of the condition of steam pressure in each of a battery of boilers, indicating which needs firing, by making possible a separate pressure reading for each. It is fully illustrated.

PICKLING EQUIPMENT—Duriron Co. Inc., Dayton, O., has prepared a booklet describing pickling equipment for use in preparing iron and steel parts. These appliances use special acid-resisting metal made by this company to give long life under conditions which test the resisting qualities of metal. The booklet is well illustrated to indicate the construction of the various devices and their use.

FIREPROOF FLOOR—A report has been issued by the Massillon Steel Joist Co., Canton, O., covering an unusually thorough test made by the Pittsburgh Testing Laboratory on a panel of floor using the Massillon company's materials. In the test the standard panel was built over an oil-fired furnace, thermocouples were imbedded at 14 points in the air spaces surrounding the joists and directly under the panel. The furnace temperature was raised rapidly to 1800 degrees Fahr. and held for 4 hours and 28 minutes. The slab was fully loaded to its designed rating, 125 pounds per square foot. Deflections and temperature readings were taken at 10-minute intervals throughout the test.

MANSFIELD QUALITY SHEETS



Taking a "Test" from Molten Bath in working a heat

FROM six to twelve such "tests" are made in working a heat of "Mansfield" Steel. Each must meet rigid quality requirements.

That this painstaking control assures *Uniform Quality* is apparent by the fine service which Mansfield Sheets render in a large number of manufactured products.

Specify MANSFIELD Automobile Sheets, Metal Furniture Sheets, "Wabik Metal" Sheets for Vitreous Enameling, Milk Can Stock, Pickled and Annealed Annealing Stock for Kitchen Utensils. *Sheet Bars and Ingots.*

MASTER TEC BRAND

Mansfield Sheet & Tin Plate Company

Mansfield, Ohio

District Sales Offices:
12-237 General Motors Bldg., Detroit, Mich.
410 Pierce Bldg., St. Louis, Mo.
1106 National City Bldg., New York, N. Y.
2002 Union Trust Bldg., Cleveland, Ohio
1504 West Venango Street, Philadelphia, Pa.
1403 Merchants Bank Bldg., Indianapolis, Ind.

Contributing Member
SHEET STEEL
TRADE EXTENSION COMMITTEE

District Sales Offices:
1020 Union Trust Bldg., Cincinnati, Ohio
640 Endicott Bldg., St. Paul, Minn.
237 Rialto Bldg., San Francisco, Calif.
509 Wilcox Bldg., Los Angeles, Calif.
1426 L. C. Smith Bldg., Seattle, Wash.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¾ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2¾ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c
Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.	

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including ⅜-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot..... .20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including ⅜-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

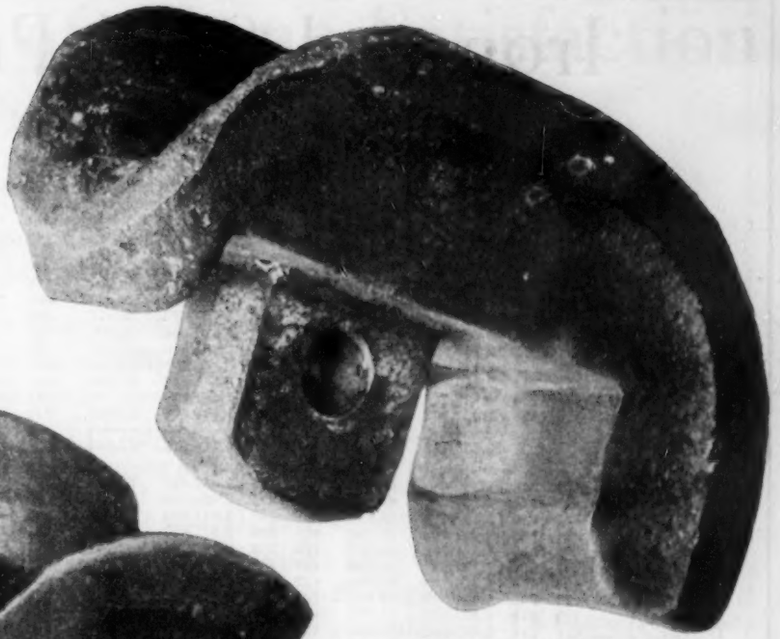
Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared wiht re-entrant angles)

Additional extra ..... .20c

SIVYER CASTINGS
DEPENDABLE

Sivyer Castings can be forged and welded



Unretouched photographs of a trolley slider after 11,351 miles of service-cast in Sivyer Alloy Electric Steel.

Sliding 10,571 Miles Farther Than Wheels Could Roll

The trolley wheels previously used for this part showed a maximum life of 780 miles. The new Sivyer Slider Casting, pictured above, is cast in Sivyer Chrome Alloy Electric Steel. It has slid 11,351 miles—10,571 miles farther than the old-fashioned trolley wheels—and the life of this Sivyer Alloy Casting has just begun. Sivyer Castings can be welded and used again. Casting users are finding that where exceptional resistance to wear is essential, Sivyer Electric Alloy Steels assure a long, low-cost life.

Insuring Long Life

The representative physical properties of Sivyer Chrome Alloy Electric Steel in the annealed state are as follows:

Tensile Strength	95,000 lbs.
Yield Point	55,000 lbs.
Elongation in 2 inches	18%
Reduction in Area	25%

The physical properties of the part pictured above are further strengthened by tempering. The result is that the Sivyer Casting exhibits a stubborn resistance to the hardest wear.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Iron and Steel Production

IN GROSS TONS

Pig Iron

Compiled by IRON TRADE REVIEW

	—Stacks—		—Output—		—Stacks—		—Output—		—Stacks—		—Output—		—Stacks—		—Output—	
	No.	In	Total	Av.daily	No.	In	Total	Av. daily	No.	In	Total	Av. daily	No.	In	Total	Av. daily
			1907				1908				1909				1910	
January	376	311	2,174,801	70,155	398	139	1,081,813	34,897	406	234	1,787,473	57,683	416	311	2,599,995	83,871
February	374	308	2,047,036	73,109	401	150	1,086,809	37,476	407	233	1,682,470	60,088	417	311	2,429,525	86,768
March	377	304	2,186,709	70,539	398	154	1,229,856	39,672	406	229	1,822,024	58,793	417	310	2,588,736	83,508
April	378	327	2,226,708	74,223	398	146	1,155,122	38,504	406	224	1,731,406	57,687	418	291	2,477,700	82,590
May	391	329	2,291,030	73,904	396	145	1,168,002	37,677	407	236	1,866,757	60,218	419	279	2,374,802	76,607
June	392	341	2,237,420	74,580	395	154	1,106,300	36,876	408	240	1,929,929	64,334	420	271	2,288,279	76,276
July	396	335	2,253,243	72,685	397	166	1,228,604	39,632	409	258	2,088,620	67,375	420	254	2,158,124	69,617
August	397	329	2,243,656	72,376	399	181	1,366,019	44,065	412	278	2,232,642	72,021	422	244	2,103,791	67,864
September	399	329	2,174,148	72,471	399	189	1,416,252	47,208	413	297	2,378,655	79,201	420	234	2,048,461	68,282
October	401	314	2,359,690	17,119	400	200	1,573,824	50,764	413	309	2,589,681	83,538	421	230	2,086,205	67,297
November	398	226	1,820,558	60,685	402	212	1,582,314	52,744	414	311	2,532,740	84,425	421	218	1,910,385	63,679
December	398	154	1,234,733	39,830	403	221	1,723,664	55,602	416	314	2,682,702	86,539	421	193	1,779,899	57,416
Total			25,249,732	*69,177			15,718,579	*42,947			25,325,099	*69,383			26,845,902	*73,550
			1911				1912				1913				1914	
January	421	210	1,766,658	56,985	421	227	2,052,806	66,220	423	297	2,787,800	89,929	423	199	1,879,336	60,624
February	421	226	1,781,285	63,617	422	235	2,098,796	72,372	423	306	2,578,670	92,095	423	219	1,888,607	67,450
March	421	236	2,165,764	69,863	420	237	2,411,529	77,791	423	278	2,762,823	89,123	423	232	2,341,551	75,534
April	421	220	2,044,904	68,163	421	239	2,377,621	79,254	421	297	2,754,353	91,812	422	212	2,261,501	75,383
May	421	206	1,871,388	60,367	423	243	2,503,341	80,753	421	285	2,816,825	90,865	422	198	2,097,019	67,646
June	421	202	1,773,282	59,109	424	242	2,433,737	81,125	422	283	2,616,883	87,229	422	193	1,904,566	63,486
July	423	196	1,776,108	57,294	422	245	2,402,567	77,502	422	264	2,558,275	82,525	422	187	1,955,324	63,075
August	423	206	1,921,832	61,995	423	255	2,500,163	80,650	424	260	2,537,018	81,839	422	187	1,996,483	64,403
September	423	216	1,973,918	65,797	419	262	2,444,454	81,482	425	258	2,494,098	83,137	422	180	1,882,718	62,757
October	421	214	2,092,061	67,486	422	280	2,683,645	86,569	425	244	2,539,924	81,933	422	162	1,767,227	57,007
November	421	214	1,999,100	66,637	423	289	2,639,562	87,985	424	225	2,229,960	74,322	421	150	1,501,269	50,042
December	422	215	2,032,301	65,558	423	291	2,777,292	89,590	424	191	1,976,138	63,746	421	154	1,495,325	48,236
Total			23,198,601	*63,558			29,325,513	*80,124			30,652,767	*83,980			22,970,926	*62,934
			1915				1916				1917				1918	
January	421	165	1,591,024	51,323	421	304	3,171,878	102,319	422	310	3,159,839	101,930	435	294	2,403,227	77,523
February	421	179	1,666,592	59,521	421	312	3,078,548	106,157	422	317	2,649,935	94,641	435	319	2,318,242	82,723
March	421	190	2,046,280	66,009	422	315	3,327,630	107,343	423	331	3,255,813	105,026	438	338	3,209,996	103,548
April	421	197	2,114,518	70,484	422	320	3,225,496	107,517	425	333	3,328,061	110,936	437	351	3,273,355	109 112
May	421	207	2,255,157	72,747	423	321	3,364,584	108,535	425	340	3,413,677	110,119	437	360	3,451,884	111,351
June	421	221	2,369,932	78,998	423	325	3,213,818	107,127	427	347	3,260,234	108,675	437	353	3,316,148	110,538
July	421	234	2,563,311	82,687	419	316	3,221,127	103,907	429	351	3,337,442	107,659	437	364	3,408,584	109,954
August	421	246	2,774,825	89,510	419	317	3,197,838	103,156	431	357	3,238,970	104,483	439	371	3,378,479	108,983
September	420	266	2,834,342	94,478	419	326	3,208,041	106,935	431	342	3,140,742	104,691	438	364	3,413,223	113,774
October	420	276	3,120,340	100,656	419	328	3,508,180	113,167	433	354	3,296,286	106,332	437	364	3,482,392	112,335
November	421	285	3,035,235	101,174	420	322	3,317,805	110,593	434	344	3,198,597	106,620	437	360	3,347,944	111,595
December	421	295	3,201,605	103,278	422	309	3,184,178	102,715	435	321	2,885,380	93,077	435	351	3,434,114	110,778
Total			29,573,161	*81,022			39,019,123	*106,609			38,164,976	*104,561			38,437,488	*105,308
			1919				1920				1921				1922	
January	435	330	3,306,279	106,654	432	285	3,012,373	97,172	436	184	2,414,753	77,895	430	127	1,645,804	53,090
February	435	311	2,943,347	105,120	432	305	2,984,257	102,904	436	155	1,929,394	68,906	429	139	1,630,180	58,220
March	435	279	3,088,023	99,614	433	315	3,375,768	108,895	436	103	1,594,866	51,447	429	155	2,035,908	65,674
April	435	216	2,474,374	82,479	433	278	2,752,670	91,754	436	96	1,190,751	39,691	429	161	2,070,161	69,005
May	433	197	2,107,729	67,991	433	297	2,991,825	96,510	436	90	1,215,272	39,202	427	175	2,309,348	74,495
June	433	199	2,114,028	70,467	433	302	3,046,623	101,553	436	74	1,064,007	35,466	427	191	2,362,455	78,748
July	434	240	2,424,212	78,200	434	291	3,043,918	98,190	435	69	864,642	27,892	427	170	2,403,030	77,517
August	432	266	2,742,081	88,453	434	306	3,145,536	101,468	436	69	954,901	30,802	427	143	1,810,665	58,408
September	433	163	2,480,790	82,692	434	317	3,124,308	104,143	435	84	985,795	32,859	427	189	2,024,008	67,466
October	432	216	1,864,424	60,142	435	290	3,288,341	106,075	435	95	1,234,450	39,821	428	218	2,629,655	84,827
November	432	252	2,407,369	80,244	435	255	2,935,081	97,836	429	120	1,414,958	47,165	428	241	2,846,110	94,870
December	432	262	2,626,074	84,711	435	202	2,700,268	87,105	429	123	1,642,775	52,992	428	253	3,083,520	99,468
Total			30,578,730	*83,777			36,400,968	*99,456			16,506,564	*45,223			26,850,844	*73,563
			1923				1924				1925				1926	
January	428	261	3,228,226	104,136	414	248	3,015,480	97,273	411	251	3,372,207	108,781	385	225	3,319,789	107,089
February	424	278	2,993,918	106,925	414	263	3,073,619	105,987	411	256	3,214,067	114,788	382	223	2,923,850	104,423
March	424	295	3,523,595	113,664	410	269	3,465,389	111,787	410	246	3,571,422	115,207	377	235	3,458,171	111,554
April	423	311	3,546,308	118,210	410	234	3,226,107	107,537	409	221	3,211,235	107,041	376	237	3,438,805	114,627
May	423	322	3,868,486	124,790	411	187	2,619,986	84,515	405	196	2,933,907	94,642	376	229	3,477,820	112,187
June	424	322	3,667,868	122,262	411	158	2,022,836	67,427	399	191	2,679,045	89,301	372	220	3,232,478	107,749
July	418	299	3,684,677	118,860	411	145	1,783,457	57,531	396	188	2,665,262	85,976	372	217	3,224,663	104,021
August	418	270	3,448,886	111,254	411	150	1,882,986	60,741	391	192	2,707,171	87,328			(See Page 604)	
September	418	254	3,117,526	103,917	411	174	2,053,617	68,454	387	200	2,725,885	90,862	.....	.....	.....	.....
October	418	245	3,142,642	101,375	411	182	2,461,727	79,410	386	209	3,017,889	97,351	.....	.....	.....	.....
November	418	229	2,891,191	96,373	411	204	2,514,979	83,832	385	220	3,023,257	100,775	.....	.....	.....	.....
December	418	231	2,912,527	93,952	411	229	2,956,389	95,367	385	234	3,249,057	104,808	.....	.....	.....	.....
Total			40,025,850	*109,659			31,076,572	*84,908			36,370,404	*99,645			23,075,576	*108,846

Steel Ingots

Compiled by American Iron and Steel Institute

	Total	Av. daily	Total	Av. daily	Total	Av. daily	Total	Av. daily	Total	Av. daily
	1922		1923		1924		1925		1926	
January	1,891,857	72,764	3,841,095	142,263	3,649,913	135,182	4,193,281	155,307	4,150,469	159,633
February	2,071,772	86,324	3,471,843	144,660	3,826,246	153,050	3,752,352	156,348	3,801,776	158,407
March	2,814,667	104,247	4,066,680	150,618	4,206,699	161,796	4,194,340	161,321	4,488,362	166,236
April	2,902,240	116,090	3,963,736	158,549	3,348,466	128,787	3,583,676	137,834	4,123,941	158,613
May	3,218,794	119,215	4,216,355	156,161	2,640,034	97,779	3,454,971	132,883	3,945,336	151,744
June	3,127,775	120,299	3,767,256	144,894	2,065,676	82,627	3,204,451	123,248	3,750,653	144 256
July	2,962,806	118,112	3,531,458	141,258	1,877,789	72,223	3,084,472	118,634	3,651,055	140,055
August	2,629,256	97,380	3,695,788	136,881	2,552,891	98,188	3,420,998	131,577	.....	.....
September	2,818,261	108,395	3,356,776	134,271	2,827,625	108,755	3,489,565	134,214	.....	.....
October	3,410,265	131,164	3,577,091	132,485	3,125,418	115,756	3,888,814	144,030	.....	.....
November	3,430,309	131,935	3,134,321	120,551	3,121,149	124,846	3,902,900	156,116	.....	.....
December	3,300,416	132,017	2,863,266	114,531	3,569,251	137,279	3,970,918	152,728	.....	.....
Total	34,568,418	*111,511	43,485,665	*139,825	36,811,157	*117,984	44,140,738	*141,932	27,911,592	*154,208

*Average.

163 Years of Crane Satisfaction
That's One User's Endorsement

Working their cranes most of the time on rapid bucket work but with plenty of hook loads and switching of cars thrown in, this user's Brownhoists show a total of over 163 years of service.

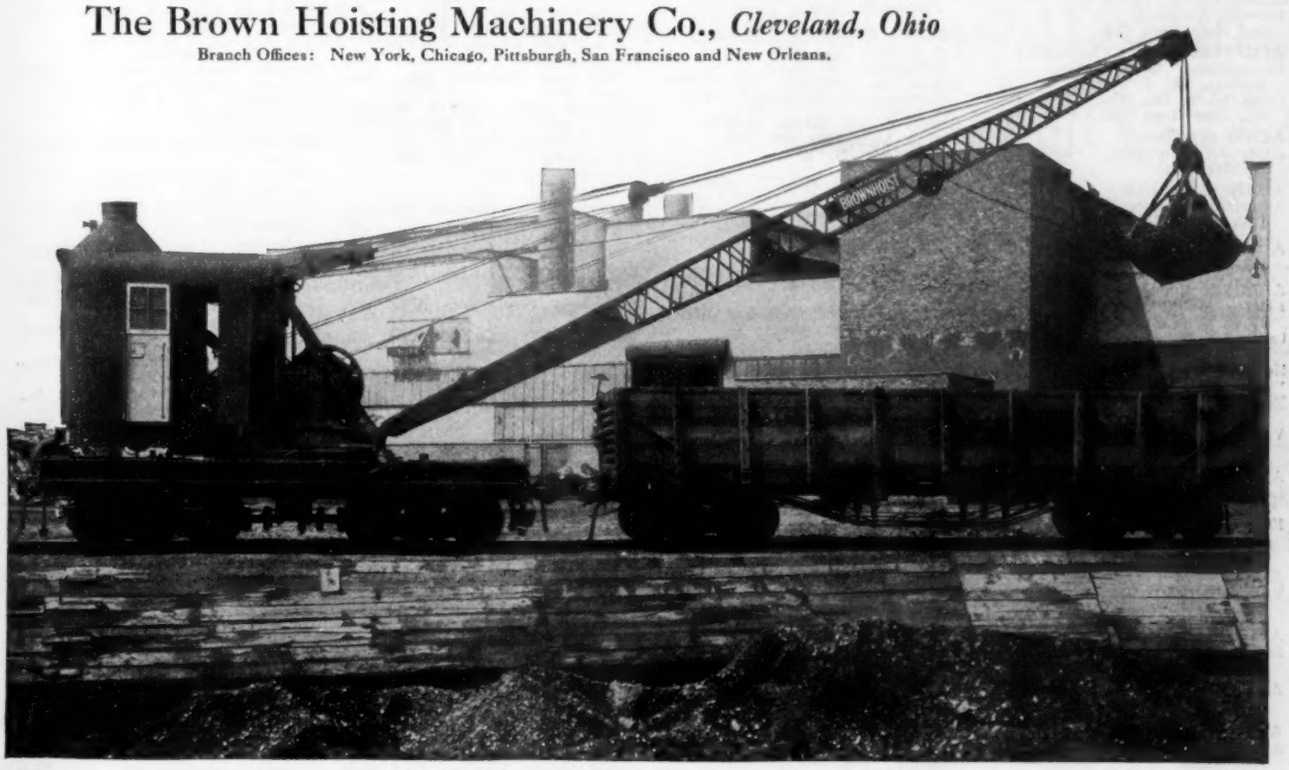
When you consider that these cranes range from 8 to 16 years old and are all still in good working condition, you get an idea of the service users receive from their Brownhoists. Working as a link in a production chain it is of primary importance that a crane stand up and that's what Brownhoists are built to do.

Whatever kind of materials you handle—sand, gravel, stone, coal, iron or scrap—a Brownhoist can effect real savings for you. Maybe a creeper crane will do your work, or perhaps an eight-wheeler will be needed, anyway you can choose from a complete line of Brownhoists. Whenever you're ready we will be glad to help you lick your handling problems.

A modern 25-ton capacity Brownhoist with Brownhoist Clamshell.

The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco and New Orleans.



BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

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Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
Internaitonal Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp., of America, 120 Broadway, New York City.

ALUMINUM TUBING
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Adamson Machine Co., The, Akron, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Swedish Crucible Steel Co., The, 8745 Conant Rd., Detroit, Mich.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, O.

ANTIGLARE PREPARATION
Skybryte Co., The, Keith Bldg., Cleveland, O.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, O.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Transue & Williams Steel Forging Corp., Alliance, O.
Witherow Steel Co., Neville Island, Pittsburgh, Pa.

BALING PRESSES
Cox & Sons Co., The, Bridgeport, N. J.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BAND SAWS (Metal Cutting)
Huther Bros. Saw Mfg. Co., Rochester, N. Y.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Alloy)
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BARS (Concrete Reinforcements)
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Truscon Steel Co., Youngstown, O.

BARS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Republic Iron & Steel Co., Youngstown, O.
Truscon Steel Co., Youngstown, O.

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS, STEEL (Electric Furnace)
Timken Roller Bearing Co., The Canton, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Blystone Mfg. Co., Ironton St. Cambridge Springs, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.

BEARINGS (Ball)
Hoover Steel Ball Co., Ann Arbor, Mich.
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Hyatt Roller Bearing Co., Newark, N. J.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.

BEARINGS (Motor)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearings Co., The, Canton, O.

BEARINGS (Thrust)
Hoover Steel Ball Co., Ann Arbor, Mich.
Norma-Hoffman Bearings Corp., Stamford ,Conn.
Timken Roller Bearing Co., The, Canton, O.

BELT CEMENT AND DRESSING (Leather)
Williams, I. B., & Sons, Dover, N. H.

BELT LACING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BELTING (Chain)
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

BELTING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BENCHES AND FRAMES (Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

BILLETS (Forging)
Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BILLETS AND BLOOMS
American Rolling Mill Co., Middletown, O.
American Tube & Stamping Plant, The, Stanley Works, The, Bridgeport, Conn.
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., The, Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Wheeling Steel Corp., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

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